UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

OFFICE OF
CHEMICAL SAFETY AND
POLLUTION PREVENTION

**MEMORANDUM**

**DATE**: March 4, 2022

**AMENDED DATE:** March 22, 2022

**SUBJECT**: Efficacy Review for Multi Purpose Plus Disinfectant Cleaner (Primary – Liquid Dilutable),
EPA Reg. No. 1677-272
Action Code Case: 00321749
E-submission No. 67584

Efficacy Review for Multi Purpose Plus Disinfectant Cleaner RTU (Secondary)
EPA Reg. No. 1677-273
Action Code Case: 00321748
E-submission No. 67585

**FROM**: Nicole Karikari
Efficacy Branch
Antimicrobials Division (7510P)
Date Signed: March 22, 2022

**THRU**: Sophie Nguyen
Efficacy Branch
Antimicrobials Division (7510P)
Date Signed: March 3, 2022

**TO**: Marcel Howard, Acting PM 34/ Heather Garvie
Regulatory Management Branch II
Antimicrobials Division (7510P)

**APPLICANT**: Ecolab, Inc.
1 Ecolab Place
St. Paul, MN 55102

**Formulations from the Label:**

*Efficacy Review for Multi Purpose Plus Disinfectant Cleaner (Primary – Liquid Dilutable)*

| Active Ingredient(s) | % by wt. |
|---|---|
| Dodecylbenzenesulfonic Acid | 10.0% |
| Other Ingredients | 90.0% |
| Total | 100.0% |

*Efficacy Review for Multi Purpose Plus Disinfectant Cleaner RTU (Secondary)*

| Active Ingredient(s) | % by wt. |
|---|---|
| Dodecylbenzenesulfonic Acid | 0.47% |
| Other Ingredients | 99.53% |
| Total | 100.00% |

## I. BACKGROUND

**Product Description (as packaged, as applied):** Concentrated Liquid (Dilutable)

**Submission type:** Label Amendment

**Currently registered efficacy claim(s):** Nonfood contact sanitizer, disinfectant (bactericide and virucide) for use on hard, nonporous and soft surface sanitizer (with electrostatic spray application).

**Requested action(s):** Applicant is submitting efficacy data to support label amendments for EPA Reg. No. 1677-272 (Primary – concentrate) and 1677-273 (Secondary – RTU) to reduce contact times disinfection (bactericidal, virucidal, and electrostatic sprayer) claims; add soft surface disinfection claims; and add a 30-day use solution stability claim.

**Documents considered in this review:**

*Efficacy Review for Multi Purpose Plus Disinfectant Cleaner (Primary – Liquid Dilutable)*

- Cover letter from applicant to EPA dated 8/11/2021
- Proposed label dated 8/18/2021
- Data Matrix (EPA Form 8570-35) dated 8/27/2021
- Twenty-one efficacy studies
    - MRID 51618801
    - MRID 51618802
    - MRID 51618803
    - MRID 51618804
    - MRID 51618805
    - MRID 51618806
    - MRID 51618807
    - MRID 51618808
    - MRID 51618809
    - MRID 51618810
    - MRID 51618811
    - MRID 51618812
    - MRID 51618813

    - MRID 51618814
    - MRID 51618815
    - MRID 51618816
    - MRID 51618817
    - MRID 51618818
    - MRID 51618819
    - MRID 51618820
    - MRID 51618821
- One Long Term Storage Stability study
    - MRID 51618822
- Confidential Statement of Formula (EPA Form 8670-4)
    - Basic Formulation dated 3/31/2021

*Efficacy Review for Multi Purpose Plus Disinfectant Cleaner RTU (Secondary)*

- Cover letter from applicant to EPA dated 8/11/2021
- Proposed label dated 7/16/2021
- Data Matrix (EPA Form 8570-35) dated 8/17/2021
- Citing twenty-one efficacy studies from EPA Reg. No. 1677-272 (MRIDs 51618801 through 51618821)
- Confidential Statement of Formula (EPA Form 8670-4)
    - Basic Formulation dated 3/31/2021

## II. PROPOSED DIRECTIONS FOR USE

*Efficacy Review for Multi Purpose Plus Disinfectant Cleaner (Primary – Liquid Dilutable)*

"**[For] [1-Step] [One-Step] [Cleaning and] Sanitizing [for] Hard, Non-Porous, Non-Food Contact Surfaces †:**
**-or-**
**To [Clean and] Sanitize Hard, Non-Porous, Non-Food Contact Surfaces† [in 1 Step] [In One Step] [in the presence of 5% organic soil load]:**
Dilute [this product] [insert product name] [through a closed loop dispenser] 4 -6 fl. oz./gal in [tap] [hard] [up to 400 ppm hard] water. Visibly soiled surfaces must be pre-cleaned [with this product] prior to sanitizing. To [clean and] sanitize, apply [this product] [insert product name] to the [hard, non-porous] surface [by] [pouring], [squirting], [or] with a [cloth,] [disposable wipe,] [sponge], [brush,] [scrubber,] [mop,] [trigger] sprayer [device] or by immersion, wetting the surface. For spray application, spray 6-8 inches from the surface. [Rub [wet surface] with clean brush, sponge or cloth]. Allow surface to remain wet for 3 minutes. Allow to air dry or remove solution with a wipe, mop, cloth, sponge, squeegee, or vacuum pickup. [No [water] rinse required]. [A water rinse is not required].

**Non-Food Contact Surface Sanitizing**
Application: Soak or Spray
Use Concentration: 4 – 6 fl. oz/gal

| **Bacteria** | **ATCC Strain** | **Contact Time** |
|---|---|---|
| *Staphylococcus aureus* | ATCC 6538 | 3 min[utes] |
| *Klebsiella aerogenes* | ATCC 13048 | 3 min[utes] |

**[For] [1-Step] [One-Step] [Spot] [Cleaning and] Sanitizing [and Deodorizing] [for] Soft Surfaces‡:**
**-or-**

**To [Clean] [Deodorize] [and] Sanitize Soft Surfaces‡ [In 1 Step] [In One Step] [in the presence of 5% organic soil load]:**
Dilute [this product] [insert product name] [through a closed loop dispenser] to 4.25 - 6 fl. oz./gal in [tap] [hard] [up to 400 ppm hard] water. Spot treat by spraying 6-8 inches from the surface until fabric is wet. Allow surface to remain wet for 5 minutes. Allow [fabric] [soft surface] to air dry, or remove solution with a wipe, mop, cloth, sponge, squeegee, or vacuum pickup. Visibly soiled areas must be cleaned prior to sanitizing. [Not recommended for use on white or light-colored fabric.] Spot-test in an inconspicuous location before application.

**Soft Surface Sanitizing – Natural and Synthetic Fabric** Application: Spray
Use Concentration: 4.25 – 6 fl. oz/gal

| **Bacteria** | **ATCC Strain** | **Contact Time** |
|---|---|---|
| *Staphylococcus aureus* | ATCC 6538 | 5 min[utes] |
| *Klebsiella aerogenes* | ATCC 13048 | 5 min[utes] |

**TO [CLEAN AND] DISINFECT AND FOR USE AS A VIRUCIDE ON HARD, NON-POROUS NON-FOOD CONTACT SURFACES [IN 1-STEP] [IN ONE-STEP] (using spray applications):**
Dilute [this product] [insert product name] to 4 – 6 fl. oz./gal in [tap] [hard] [up to 400 ppm hard] water. Apply [this product] [insert product name] to surface by [hand pump] [coarse] [trigger][pressurized] [sprayer] (6-8 inches from surface) to wet the surface. Allow surface to remain wet for the contact time indicated in the table below. Air dry or remove solution with a wipe, mop, cloth, sponge, squeegee, or vacuum pickup. (No (water) rinse required on non-food contact surfaces). Visibly soiled areas must be cleaned prior to disinfection. Do not use on glassware, dishes, or silverware.

**Hard Non-Porous Surface Disinfection [by Spray Application]** Application: Spray
Use Concentration: 4 – 6 fl. oz/gal

| **Bacteria** | **ATCC Strain** | **Contact Time** |
|---|---|---|
| *Staphylococcus aureus* | ATCC 6538 | 5 min[utes] |
| *Pseudomonas aeruginosa* | ATCC 15442 | 5 min[utes] |
| *Salmonella enterica subspecies enterica serovar Typhi* | ATCC 6539 | 3 min[utes] |
| *Proteus mirabilis* | ATCC 7002 | 3 min[utes] |
| *Bordetella bronchiseptica* | ATCC 10580 | 5 min[utes] |
| *Bordetella pertussis* | ATCC12743 | 5 min[utes] |
| *Klebsiella pneumoniae* | ATCC 4352 | 5 min[utes] |
| *Klebsiella aerogenes* | ATCC 13048 | 5 min[utes] |
| *Serratia marcescens* | ATCC 14756 | 5 min[utes] |
| *Shigella dysenteriae* | ATCC 29026 | 5 min[utes] |
| *Enterococcus faecalis [Vancomycin resistant [VRE]]* | ATCC 51299 | 5 min[utes] |
| *Klebsiella pneumoniae [Carbapenemase producer or Carbapenem-resistant] [KPC]* | ATCC BAA-1705 | 5 min[utes] |
| *Staphylococcus aureus [MRSA]* | ATCC 33592 | 5 min[utes] |
| *Staphylococcus aureus [CA-MRSA] USA-400* | ATCC BAA-1683 | 5 min[utes] |
| *Escherichia coli* 0157:H7 | ATCC 43895 | 5 min[utes] |
| *Listeria monocytogenes* | ATCC 7644 | 5 min[utes] |
| *Streptococcus pyogenes* | ATCC 19615 | 5 min[utes] |

| **Viruses*** | **ATCC Strain** | **Contact Time** |
|---|---|---|
| *Influenza A [H1N1] | ATCC VR-1469 | 30 sec[onds] |
| *Norovirus [Feline Calicivirus Surrogate] [FCV] [Norwalk] | ATCC VR-782 | 30 sec[onds] |
| *Rhinovirus Type 37 | ATCC VR-1607 | 30 sec[onds] |
| *SARS-CoV-2 virus [*SARS-Related Coronavirus 2] | USA-WA 1/2020 | 10 sec[onds] |
| *Adenovirus Type 5 | ATCC VR-5 | 30 sec[onds] |
| *Canine distemper | ATCC VR-128 | 30 sec[onds] |
| *Canine parvovirus, Strain Cornell-780916-80 | ATCC VR-2017 | 30 sec[onds] |
| *Hepatitis B Virus [Duck Hepatitis B as surrogate] | | 30 sec[onds] |
| *Hepatitis C Virus [Bovine Viral Diarrhea] [HCV] | ATCC VR-1422 | 30 sec[onds] |
| *Herpes Simplex Type I [Herpes] | ATCC VR-733 | 30 sec[onds] |
| *Human Immunodeficiency Virus type 1 [HIV-1] Strain HTLV IIIB | | 30 sec[onds] |
| *Human Coronavirus, Strain 229E | ATCC VR-740 | 30 sec[onds] |
| *Influenza A [H3N2] | ATCC VR-544 | 30 sec[onds] |
| *Influenza B | ATCC VR-1535 | 30 sec[onds] |
| *Murine Norovirus | | 2 min[utes] |
| *Poliovirus Type 1 [Chat Strani, Strain Brunhilde] | ATCC CCL-81 | 30 sec[onds] |
| *Respiratory Syncytial Virus [RSV] | ATCC VR-26 | 30 sec[onds] |
| *Rotavirus [Strain WA] | ATCC VR-2018 | 30 sec[onds] |
| *Vaccinia Virus [Pox Virus] | ATCC VR-119 | 30 sec[onds] |
| *Measles | ATCC VR-24 | 30 sec[onds] |
| *Feline panleukopenia | ATCC VR-648 | 30 sec[onds] |
| *Herpes Simplex Type II [Herpes] | ATCC VR-734 | 30 sec[onds] |

**Hard, Non-Porous Surface Disinfection [by Spray Application]** Application: Spray
Use Concentration: 6 fl. oz/gal

| **Bacteria** | **ATCC Strain** | **Contact Time** |
|---|---|---|
| *Staphylococcus aureus* | ATCC 6538 | 3 min[utes] |
| *Pseudomonas aeruginosa* | ATCC 15442 | 3 min[utes] |
| ***Viruses**** | ATCC Strain | Contact Time |
| *Murine Norovirus | | 30 sec[onds] |

**TO [CLEAN AND] DISINFECT AND FOR USE AS A VIRUCIDE ON HARD, NON-POROUS NON-FOOD CONTACT SURFACES (using soak applications):**
Dilute [this product] [insert product name] to 6 fl. oz./gal in [tap] [hard] [up to 400 ppm hard] water. Surfaces must be pre-cleaned [with] [this product] [or] [a suitable cleaner] prior to disinfecting. To disinfect, apply [this product] [insert product name] to the surface [by] [pouring], [squirting], [or] [with a] [cloth,] [disposable wipe,] [sponge,] [brush,] [scrubber,] [mop,] or sprayer [device], wetting the surface. Allow surface to remain wet for the contact time indicated in the table below. Allow to air dry or remove solution with a wipe, mop, cloth, sponge, squeegee, or vacuum pickup. (No (water) rinse required on non-food contact surfaces). Visibly soiled areas must be cleaned prior to disinfection.

**Hard, Non-Porous Surface Disinfection**
Application: Soak or spray
Use Concentration: 6 fl. oz/gal

| **Bacteria** | **ATCC Strain** | **Contact Time** |
|---|---|---|
| *Staphylococcus aureus* | ATCC 6538 | 10 min[utes]** |
| *Pseudomonas aeruginosa* | ATCC 15442 | 10 min[utes]** |
| **Viruses*** | **ATCC Strain** | **Contact Time** |
| *Influenza A [H1N1] | ATCC VR-1469 | 30 sec[onds] |
| *Norovirus [Feline Calicivirus Surrogate] [FCV] [Norwalk] | ATCC VR-782 | 30 sec[onds] |
| *Rhinovirus Type 37 | ATCC VR-1607 | 30 sec[onds] |
| *SARS-CoV-2 virus [*SARS-Related Coronavirus 2] | USA-WA 1/2020 | 30 sec[onds] |

**FOR USE AS A [ONE-STEP] SOFT SURFACE DISINFECTANT AND VIRUCIDE ON SOFT SURFACES:**
Apply [this product] [insert product name] by [hand pump] [coarse] [trigger][pressurized] sprayer [6-8 inches from surface] to wet the surface. Allow surface to remain wet for the contact time indicated in the table below. Allow fabric to air dry, or remove solution with a wipe, mop, cloth, sponge, squeegee, or vacuum. [Reapply as necessary]. Visibly soiled areas must be cleaned prior to disinfecting. Effective on natural and synthetic surfaces such as rayon, polyester, and cotton. Not recommended for use on nylon [or for use on white [or light colored] soft surfaces]. Spot-test in an inconspicuous location before application. Effective in the presence of 5% fetal bovine serum against the following:

**Soft Surface Disinfection**
Application: Spray

| **Bacteria** | **ATCC Strain** | **Contact Time** |
|---|---|---|
| *Staphylococcus aureus* | ATCC 6538 | 10 min[utes] |
| *Pseudomonas aeruginosa* | ATCC 15442 | 10 min[utes] |
| **Viruses*** | **ATCC Strain** | **Contact Time** |
| Human Adenovirus Type 5 | ATCC VR-5 | 10 min[utes] |

**GENERAL DIRECTIONS FOR USE WITH ELECTROSTATIC SPRAYING**
Remove by-standers and pets from the area to be treated. Do not use for treatment of humans, air, or for fumigation. Spray droplet particle size should set to a limit volume median diameter of ≥40µm. Use N95 filtering facepiece respirators or half face respirators with N95 filters. Plan the spray routine to minimize unnecessary exposure to treated areas [for example, begin applying product in the back of the room/area and work towards the front of the room/area]. Place the electrostatic spray function in the ON position for electrostatic spray models that have the functionality to toggle ON/OFF.
**FOR USE A [MULTI SURFACE] [ONE-STEP] CLEANER, DISINFECTANT, AND VIRUCIDE BY ELECTROSTATIC SPRAYING**
To disinfect hard, non-porous surfaces, dilute 4 - 6 fl. oz./gal. For visibly soiled areas, pre-cleaning is required. Apply use solution with electrostatic sprayer to hard, non-porous environmental surfaces. Spray approximately 6 to 12 inches from the surfaces; making sure to wet surfaces thoroughly. All surfaces must remain wet for the required contact time indicated in the hard surface disinfection table, reapplying if necessary. Wipe or let air dry. When using on food contact surfaces, thoroughly rinse all treated surfaces with potable water."

*Efficacy Review for Multi Purpose Plus Disinfectant Cleaner RTU (Secondary)*

"**[For] [1-Step] [One-Step] [Cleaning and] Sanitizing [for] Hard, Non-Porous, Non-Food Contact Surfaces†:**
**-or-**
**To [Clean and] Sanitize Hard, Non-Porous, Non-Food Contact Surfaces† [in 1 Step] [In One Step] [in the presence of 5% organic soil load]:**
To [clean and] sanitize, apply [this product] [insert product name] to the [hard, non-porous] surface [by] [pouring], [squirting], [or] [with a] [cloth,] [disposable wipe,] [sponge,] [brush,] [scrubber,] [mop,] [trigger] [electrostatic] sprayer [device] [or by immersion], wetting the surface. For spray application, spray 6-8 inches from the surface. [Rub [wet surface] with clean brush, sponge or cloth]. Allow surface to remain wet for 3 minutes. Allow to air dry or remove solution with a wipe, mop, cloth, sponge, squeegee, or vacuum pickup. [No [water] rinse required]. [A water rinse is not required]. Visibly soiled surfaces [must] [should] be pre-cleaned [with this product] prior to sanitizing.

**Non-Food Contact Surface Sanitizing**
Application: Soak or Spray

| **Bacteria** | **ATCC Strain** | **Contact Time** |
|---|---|---|
| *Staphylococcus aureus* | ATCC 6538 | 3 min[utes] |
| *Klebsiella aerogenes* | ATCC 13048 | 3 min[utes] |

**[For] [1-Step] [One-Step] [Spot] [Cleaning and] Sanitizing [and Deodorizing] [for] Soft Surfaces‡:**
**-or-**
**To [Clean] [Deodorize] [and] Sanitize Soft Surfaces‡ [In 1 Step] [In One Step] [in the presence of 5% organic soil load]:**
Spot treat by spraying 6-8 inches from the surface until fabric is wet. Allow surface to remain wet for 5 minutes. Allow [fabric] [soft surface] to air dry, or remove solution with a wipe, mop, cloth, sponge, squeegee, or vacuum pickup. Visibly soiled areas must be cleaned prior to sanitizing. [Not recommended for use on white or light-colored fabric.] Spot-test in an inconspicuous location before application.

**Soft Surface Sanitizing – Natural and Synthetic Fabric** Application: Spray

| **Bacteria** | **ATCC Strain** | **Contact Time** |
|---|---|---|
| *Staphylococcus aureus* | ATCC 6538 | 5 min[utes] |
| *Klebsiella aerogenes* | ATCC 13048 | 5 min[utes] |

**TO [CLEAN AND] DISINFECT AND FOR USE AS A VIRUCIDE ON HARD, NON-POROUS NON-FOOD CONTACT SURFACES [IN 1-STEP] [IN ONE-STEP] (using spray applications):**
Apply [this product] [insert product name] to surface by [hand pump] [coarse] [trigger][pressurized] [sprayer] [6-8 inches from surface] to wet the surface. Allow surface to remain wet for the contact time indicated in the table below. Air dry or remove solution with a wipe, mop, cloth, sponge, squeegee, or vacuum pickup. (No (water) rinse required on non-food contact surfaces). Visibly soiled areas must be cleaned prior to disinfection. Do not use on glassware, dishes, or silverware.

**Hard, Non-Porous Surface Disinfection [by Spray Application]** Application: Spray

| **Bacteria** | **ATCC Strain** | **Contact Time** |
|---|---|---|
| *Staphylococcus aureus* | ATCC 6538 | 3 min[utes] |
| *Pseudomonas aeruginosa* | ATCC 15442 | 3 min[utes] |
| *Salmonella enterica subspecies enterica serovar Typhi* | ATCC 6539 | 3 min[utes] |
| *Proteus mirabilis* | ATCC 7002 | 3 min[utes] |
| *Bordetella bronchiseptica* | ATCC 10580 | 3 min[utes] |
| *Bordetella pertussis* | ATCC12743 | 3 min[utes] |
| *Klebsiella pneumoniae* | ATCC 4352 | 5 min[utes] |
| *Klebsiella aerogenes* | ATCC 13048 | 5 min[utes] |

| | | |
|---|---|---|
| *Serratia marcescens* | ATCC 14756 | 5 min[utes] |
| *Shigella dysenteriae* | ATCC 29026 | 5 min[utes] |
| *Enterococcus faecalis [Vancomycin resistant [VRE]]* | ATCC 51299 | 5 min[utes] |
| *Klebsiella pneumoniae [Carbapenemase producer or Carbapenem-resistant] [KPC]* | ATCC BAA-1705 | 5 min[utes] |
| *Staphylococcus aureus [MRSA]* | ATCC 33592 | 5 min[utes] |
| *Staphylococcus aureus [CA-MRSA] USA-400* | ATCC BAA-1683 | 5 min[utes] |
| *Escherichia coli* 0157:H7 | ATCC 43895 | 5 min[utes] |
| *Listeria monocytogenes* | ATCC 7644 | 5 min[utes] |
| *Streptococcus pyogenes* | ATCC 19615 | 5 min[utes] |
| **Viruses*** | **ATCC Strain** | **Contact Time** |
| *Influenza A [H1N1] | ATCC VR-1469 | 30 sec[onds] |
| *Norovirus [Feline Calicivirus Surrogate] [FCV] [Norwalk] | ATCC VR-782 | 30 sec[onds] |
| *Rhinovirus Type 37 | ATCC VR-1607 | 30 sec[onds] |
| *SARS-CoV-2 virus [*SARS-Related Coronavirus 2] | USA-WA 1/2020 | 10 sec[onds] |
| *Adenovirus Type 5 | ATCC VR-5 | 30 sec[onds] |
| *Canine distemper | ATCC VR-128 | 30 sec[onds] |
| *Canine parvovirus, Strain Cornell-780916-80 | ATCC VR-2017 | 30 sec[onds] |
| *Hepatitis B Virus [Duck Hepatitis B as surrogate] | | 30 sec[onds] |
| *Hepatitis C Virus [Bovine Viral Diarrhea] [HCV] | ATCC VR-1422 | 30 sec[onds] |
| *Herpes Simplex Type I [Herpes] | ATCC VR-733 | 30 sec[onds] |
| *Human Immunodeficiency Virus type 1 [HIV-1] Strain HTLV IIIB | | 30 sec[onds] |
| *Human Coronavirus, Strain 229E | ATCC VR-740 | 30 sec[onds] |
| *Influenza A [H3N2] | ATCC VR-544 | 30 sec[onds] |
| *Influenza B | ATCC VR-1535 | 30 sec[onds] |
| *Murine Norovirus | | 30 sec[onds] |
| *Poliovirus Type 1 [Chat Strain, Strain Brunhilde] | ATCC VR-1562 | 30 sec[onds] |
| *Respiratory Syncytial Virus [RSV] | ATCC VR-26 | 30 sec[onds] |
| *Rotavirus [Strain WA] | ATCC VR-2018 | 30 sec[onds] |
| *Vaccinia Virus [Pox Virus] | ATCC VR-119 | 30 sec[onds] |
| *Measles | ATCC VR-24 | 30 sec[onds] |
| *Feline panleukopenia | ATCC VR-648 | 30 sec[onds] |
| *Herpes Simplex Type II [Herpes] | ATCC VR-734 | 30 sec[onds] |

**TO [CLEAN AND] DISINFECT AND FOR USE AS A VIRUCIDE ON HARD, NON-POROUS NON-FOOD CONTACT SURFACES (using soak applications):**

Surfaces must be pre-cleaned [with] [this product] [or] [a suitable cleaner] prior to disinfecting. To disinfect, apply [this product] [insert product name] to the surface [by] [pouring], [squirting], [or] [with a]

[cloth,] [disposable wipe,] [sponge,] [brush,] [scrubber,] [mop,] or sprayer [device], wetting the surface. Allow surface to remain wet for the contact time indicated in the table below. Allow to air dry or remove solution with a wipe, mop, cloth, sponge, squeegee, or vacuum pickup. (No (water) rinse required on non-food contact surfaces).

**Hard, Non-Porous Surface Disinfection**
Application: Soak or spray

| **Bacteria** | **ATCC Strain** | **Contact Time** |
|---|---|---|
| *Staphylococcus aureus* | ATCC 6538 | 10 min[utes]** |
| *Pseudomonas aeruginosa* | ATCC 15442 | 10 min[utes]** |
| **Viruses*** | **ATCC Strain** | **Contact Time** |
| *Influenza A [H1N1]] | ATCC VR-1469 | 30 sec[onds] |
| *Norovirus [Feline Calicivirus Surrogate] [FCV] [Norwalk] | ATCC VR-782 | 30 sec[onds] |
| *Rhinovirus Type 37 [common cold] | ATCC VR-1607 | 30 sec[onds] |
| *SARS-CoV-2 virus [*SARS-Related Coronavirus 2] | USA-WA 1/2020 | 30 sec[onds] |

** A 10-minute contact time is not applicable for electrostatic sprayers; a 3-minute contact time must be used.

**FOR USE AS A [ONE-STEP] SOFT SURFACE DISINFECTANT AND VIRUCIDE ON SOFT SURFACES:**
Apply [this product] [insert product name] by [hand pump] [coarse] [trigger][pressurized] sprayer [6-8 inches from surface] to wet the surface. Allow surface to remain wet for the contact time indicated in the table below. Allow fabric to air dry, or remove solution with a wipe, mop, cloth, sponge, squeegee, or vacuum. [Reapply as necessary]. Visibly soiled areas must be cleaned prior to disinfecting. Effective on natural and synthetic surfaces such as rayon, polyester, and cotton. Not recommended for use on nylon [or for use on white [or light colored] soft surfaces]. Spot-test in an inconspicuous location before application. Effective in the presence of 5% fetal bovine serum against the following:

**Soft Surface Disinfection**
Application: Spray

| **Bacteria** | **ATCC Strain** | **Contact Time** |
|---|---|---|
| *Staphylococcus aureus* | ATCC 6538 | 10 min[utes] |
| *Pseudomonas aeruginosa* | ATCC 15442 | 10 min[utes] |
| **Viruses*** | **ATCC Strain** | **Contact Time** |
| Human Adenovirus Type 5 | ATCC VR-5 | 10 min[utes] |

**FOR USE AS A [TWO-STEP] SOFT SURFACE DISINFECTANT AND VIRUCIDE ON SOFT SURFACES:**
Pre-clean fabric surface. Apply [this product] [insert product name] by [hand pump] [coarse] [trigger][pressurized] sprayer [6-8 inches from surface] to wet the surface. Allow surface to remain wet for the contact time indicated in the table below. Allow fabric to air dry, or remove solution with a wipe, mop, cloth, sponge, squeegee, or vacuum. [Reapply as necessary]. Effective on natural and synthetic surfaces such as rayon, polyester, and cotton. Not recommended for use on nylon [or for use on white [or light colored] soft surfaces]. Spot-test in an inconspicuous location before application. Effective against the following:

**Soft Surface Disinfection**
Application: Spray

| **Bacteria** | **ATCC Strain** | **Contact Time** |
|---|---|---|

| | | |
|---|---|---|
| *Staphylococcus aureus* | ATCC 6538 | 10 min[utes] |
| *Pseudomonas aeruginosa* | ATCC 15442 | 10 min[utes] |
| **Viruses*** | **ATCC Strain** | **Contact Time** |
| *Norovirus [Feline Calicivirus Surrogate] [FCV] [Norwalk] | ATCC VR-782 | 5 min[utes] |
| Human Adenovirus Type 5 | ATCC VR-5 | 10 min[utes] |

**GENERAL DIRECTIONS FOR USE WITH ELECTROSTATIC SPRAYING**
Remove by-standers and pets from the area to be treated. Do not use for treatment of humans, air, or for fumigation. Spray droplet particle size should be set to a limit median diameter of ≥40µm. Use N95 filtering facepiece respirators or half face respirators with N95 filters. Plan the spray routine to minimize unnecessary exposure to treated areas [for example, begin applying product in the back of the room/area and work towards the front of the room/area]. Place the electrostatic spray function in the ON position for electrostatic spray models that have the functionality to toggle ON/OFF.
**FOR USE AS A [MULTI SURFACE] [ONE-STEP] CLEANER, DISINFECTANT, AND VIRUCIDE BY ELECTROSTATIC SPRAYING**
To disinfect hard, non-porous surfaces, apply use solution with electrostatic sprayer. Spray approximately 6 to 12 inches from the surfaces; making sure to wet surfaces thoroughly. All surfaces must remain wet for the required contact time indicated in the hard surface disinfection table, reapplying if necessary. Wipe or let air dry. For visibly soiled areas, pre-cleaning is required. When using on food contact surfaces, thoroughly rinse all treated surfaces with potable water."

## III. STUDY SUMMARIES

| | | |
|---|---|---|
| **1.** | **MRID** | 51618801 |
| **Study Objective** | | Disinfectant - Virucidal |
| **Testing Lab; Lab Study ID** | | Analytical Lab Group – Midwest; A31331 |
| **Experimental Start Date** | | 12/2/2020 **Study Completion Date:** 1/8/2021 |
| **Test organism(s)** ☒ **1** ☐ **2** ☐ **3** ☐ **4+** | | Bovine Viral Diarrhea Virus (BVDV) (ATCC VR-1422) as a surrogate for Human Hepatitis C Virus |
| **Indicator Cell Culture** | | Bovine Turbinate (BT) cells (ATCC CRL-1390) |
| **Test Method** | | ASTM E1053-11; Protocol Number: ECO01091720.BVD |
| **Application Method** | | "The carriers were sprayed using 4 sprays, until thoroughly wet, at a distance of 6 to 8 inches, and held covered for the exposure time." |
| **Test Substance Preparation** | **Name/ID** | 920209 |
| | **Lots** ☐ **1** ☒ **2** ☐ **3** | 5439EG2200 (Quaternary Active: 9.9%)<br>5439EG2400 (Quaternary Active: 9.9%) |
| | **Preparation** | Tested concentration: LCL<br>Tested Dilution: 4 oz./ 1 gallon defined as 8.93 g +/- 0.03 g test substance + 291.07 g +/- 0.03 g of diluent<br>Diluent: 400 ppm AOAC Synthetic Hard Water |
| **Soil load** | | 5% horse serum |
| **Carrier type, # per lot** | | 100 x 15 mm sterile glass Petri dish, 2 per lot |
| **Test conditions** | | Contact time: 30 seconds<br>Temperature: 21.0°C<br>Relative humidity: 16.63% |
| **Neutralizer** | | Sephadex LH-20 gel column |
| **Reviewer comments** | | Protocol Amendment: |

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| (i.e. protocol deviations and amendments, retesting, control failures, etc.) | "This protocol is amended to add Health Canada to the study acceptance criteria, in section "a" of the protocol modifications attachment, for clarity."<br><br>No Protocol Deviations were reported. |

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| **2.** | **MRID** | 51618802 | | |
| **Study Objective** | | Disinfectant - Virucidal | | |
| **Testing Lab; Lab Study ID** | | Analytical Lab Group – Midwest; A31426 | | |
| **Experimental Start Date** | | 12/3/2020 | **Study Completion Date:** | 1/26/2021 |
| **Test organism(s)**<br>**☒ 1 ☐ 2 ☐ 3 ☐ 4+** | | Respiratory Syncytial Virus (RSV), Strain Long (ATCC VR-26) | | |
| **Indicator Cell Culture** | | Hep-2 (human larynx carcinoma) cells (ATCC CCL-23) | | |
| **Test Method** | | ASTM E1053-20; Protocol Number: ECO01091720.RSV | | |
| **Application Method** | | "The carriers were sprayed using 4 sprays, until thoroughly wet, at a distance of 6 to 8 inches, and held covered for the exposure time." | | |
| **Test Substance Preparation** | **Name/ID** | 920209 | | |
| | **Lots**<br>**☐ 1 ☒ 2 ☐ 3** | 5439EG2200 (Quaternary Active: 9.9%)<br>5439EG2400 (Quaternary Active: 9.9%) | | |
| | **Preparation** | Tested concentration: LCL<br>Tested Dilution: 4 oz./ 1 gallon defined as 8.93 g +/- 0.03 g test substance + 291.07 g +/- 0.03 g of diluent<br>Diluent: 400 ppm AOAC Synthetic Hard Water | | |
| **Soil load** | | 5% Fetal Bovine Serum | | |
| **Carrier type, # per lot** | | 100 x 15 mm sterile glass Petri dish, 1 per lot | | |
| **Test conditions** | | Contact time: 30 seconds<br>Temperature: 21.0°C<br>Relative humidity: 19.57% | | |
| **Neutralizer** | | Sephadex LH-20 gel column | | |
| **Reviewer comments**<br>(i.e. protocol deviations and amendments, retesting, control failures, etc.) | | No Protocol Amendments or Protocol Deviations were reported. | | |

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| **3.** | **MRID** | 51618803 | | |
| **Study Objective** | | Disinfectant - Virucidal | | |
| **Testing Lab; Lab Study ID** | | Analytical Lab Group – Midwest; A31320 | | |
| **Experimental Start Date** | | 12/1/2020 | **Study Completion Date:** | 1/6/2021 |
| **Test organism(s)**<br>**☒ 1 ☐ 2 ☐ 3 ☐ 4+** | | Canine Distemper Virus, Strain Lederle (ATCC VR-128) | | |
| **Indicator Cell Culture** | | Vero cells (ATCC CCL-81) | | |
| **Test Method** | | ASTM E1053-11; Protocol Number: ECO01091720.CDIS | | |
| **Application Method** | | "The carriers were sprayed using 4 sprays, until thoroughly wet, at a distance of 6 to 8 inches, and held covered for the exposure time." | | |
| | **Name/ID** | 920209 | | |

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| **Test Substance Preparation** | **Lots** ☐ **1** ☒ **2** ☐ **3** | 5439EG2200 (Quaternary Active: 9.9%)<br>5439EG2400 (Quaternary Active: 9.9%) |
| | **Preparation** | Tested concentration: LCL<br>Tested Dilution: 4 oz./ 1 gallon defined as 8.93 g +/- 0.03 g test substance + 291.07 g +/- 0.03 g of diluent<br>Diluent: 400 ppm AOAC Synthetic Hard Water |
| **Soil load** | | 5% Fetal Bovine Serum |
| **Carrier type, # per lot** | | 100 x 15 mm sterile glass Petri dish, 1 per lot |
| **Test conditions** | | Contact time: 30 seconds<br>Temperature: 21.5°C<br>Relative humidity: 16.08% |
| **Neutralizer** | | Sephadex LH-20 gel column |
| **Reviewer comments** (i.e. protocol deviations and amendments, retesting, control failures, etc.) | | No Protocol Amendments or Protocol Deviations were reported. |

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| **4.** | **MRID** | 51618804 | | |
| **Study Objective** | | Disinfectant - Virucidal | | |
| **Testing Lab; Lab Study ID** | | Analytical Lab Group – Midwest; A31477 | | |
| **Experimental Start Date** | | 12/3/2020 | **Study Completion Date:** | 1/20/2021 |
| **Test organism(s)** ☒ **1** ☐ **2** ☐ **3** ☐ **4+** | | Canine Parvovirus, Strain Cornell-780916-80 (ATCC VR-2017) | | |
| **Indicator Cell Culture** | | A-72 (Canine Tumor) Cells (ATCC CRL-1542) | | |
| **Test Method** | | ASTM E1053-11; Protocol Number: ECO01091720.CPV | | |
| **Application Method** | | “The carriers were sprayed using 4 sprays, until thoroughly wet, at a distance of 6 to 8 inches, and held covered for the exposure time.” | | |
| **Test Substance Preparation** | **Name/ID** | 920209 | | |
| | **Lots** ☐ **1** ☒ **2** ☐ **3** | 5439EG2200 (Quaternary Active: 9.9%)<br>5439EG2400 (Quaternary Active: 9.9%) | | |
| | **Preparation** | Tested concentration: LCL<br>Tested Dilution: 4 oz./ 1 gallon defined as 8.93 g +/- 0.03 g test substance + 291.07 g +/- 0.03 g of diluent<br>Diluent: 400 ppm AOAC Synthetic Hard Water | | |
| **Soil load** | | 5% Fetal Bovine Serum | | |
| **Carrier type, # per lot** | | 100 x 15 mm sterile glass Petri dish, 1 per lot | | |
| **Test conditions** | | Contact time: 30 seconds<br>Temperature: 22.0°C<br>Relative humidity: 20.91% | | |
| **Neutralizer** | | Sephadex LH-20 gel column | | |
| **Reviewer comments** (i.e. protocol deviations and amendments, retesting, control failures, etc.) | | No Protocol Amendments or Protocol Deviations were reported. | | |

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| **5.** | **MRID** | 51618805 |

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| **Study Objective** | | Disinfectant - Virucidal |
| **Testing Lab; Lab Study ID** | | Analytical Lab Group – Midwest; A31366 |
| **Experimental Start Date** | | 11/24/2020 **Study Completion Date:** 5/5/2021 |
| **Test organism(s)**<br>**☒ 1 ☐ 2 ☐ 3 ☐ 4+** | | Human Coronavirus, Strain 229E (ATCC VR-740) |
| **Indicator Cell Culture** | | WI-38 (human lung) cells (ATCC VR-740) |
| **Test Method** | | ASTM E1053-20; Protocol Number: ECO01091720.COR |
| **Application Method** | | "The carriers were sprayed using 4 sprays, until thoroughly wet, at a distance of 6 to 8 inches, and held covered for the exposure time." |
| **Test Substance Preparation** | **Name/ID** | 920209 |
| | **Lots**<br>**☐ 1 ☒ 2 ☐ 3** | 5439EG2200 (Quaternary Active: 9.9%)<br>5439EG2400 (Quaternary Active: 9.9%) |
| | **Preparation** | Tested concentration: LCL<br>Tested Dilution: 4 oz./ 1 gallon defined as 8.93 g +/- 0.03 g test substance + 291.07 g +/- 0.03 g of diluent<br>Diluent: 400 ppm AOAC Synthetic Hard Water |
| **Soil load** | | 5% Fetal Bovine Serum |
| **Carrier type, # per lot** | | 100 x 15 mm sterile glass Petri dish, 1 per lot |
| **Test conditions** | | Contact time: 30 seconds<br>Temperature: 22.0°C<br>Relative humidity: 25.75% |
| **Neutralizer** | | Sephadex LH-20 gel column |
| **Reviewer comments**<br>(i.e. protocol deviations and amendments, retesting, control failures, etc.) | | No Protocol Amendments or Protocol Deviations were reported. |

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| **6.** | **MRID** | 51618806 |
| **Study Objective** | | Disinfectant - Virucidal |
| **Testing Lab; Lab Study ID** | | Analytical Lab Group – Midwest; A31328 |
| **Experimental Start Date** | | 12/1/2020 **Study Completion Date:** 1/18/2021 |
| **Test organism(s)**<br>**☒ 1 ☐ 2 ☐ 3 ☐ 4+** | | Feline Panleukopenia virus, Strain Philips-Roxane (ATCC VR-648) |
| **Indicator Cell Culture** | | CRFK (feline kidney) cells (ATCC CCL-994) |
| **Test Method** | | ASTM E1053-20; Protocol Number: ECO01091720.FPLV |
| **Application Method** | | "The carriers were sprayed using 4 sprays, until thoroughly wet, at a distance of 6 to 8 inches, and held covered for the exposure time." |
| **Test Substance Preparation** | **Name/ID** | 920209 |
| | **Lots**<br>**☐ 1 ☒ 2 ☐ 3** | 5439EG2200 (Quaternary Active: 9.9%)<br>5439EG2400 (Quaternary Active: 9.9%) |
| | **Preparation** | Tested concentration: LCL<br>Tested Dilution: 4 oz./ 1 gallon defined as 8.93 g +/- 0.03 g test substance + 291.07 g +/- 0.03 g of diluent<br>Diluent: 400 ppm AOAC Synthetic Hard Water |
| **Soil load** | | 5% Fetal Bovine Serum |

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| **Carrier type, # per lot** | 100 x 15 mm sterile glass Petri dish, 1 per lot |
| **Test conditions** | Contact time: 30 seconds<br>Temperature: 21.0°C<br>Relative humidity: 13.97% |
| **Neutralizer** | Sephadex LH-20 gel column |
| **Reviewer comments** (i.e. protocol deviations and amendments, retesting, control failures, etc.) | No Protocol Amendments or Protocol Deviations were reported. |

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| **7.** | **MRID** | 51618807 | | |
| **Study Objective** | | Disinfectant - Virucidal | | |
| **Testing Lab; Lab Study ID** | | Analytical Lab Group – Midwest; A31349 | | |
| **Experimental Start Date** | | 11/23/2020 | **Study Completion Date:** | 1/6/2021 |
| **Test organism(s)**<br>**☒ 1 ☐ 2 ☐ 3 ☐ 4+** | | Poliovirus type 1, Strain Chat (ATCC VR-1562) | | |
| **Indicator Cell Culture** | | Vero cells (ATCC CCL-81) | | |
| **Test Method** | | ASTM E1053-20; Protocol Number: ECO01091720.POL | | |
| **Application Method** | | "The carriers were sprayed using 4 sprays, until thoroughly wet, at a distance of 6 to 8 inches, and held covered for the exposure time." | | |
| **Test Substance Preparation** | **Name/ID** | 920209 | | |
| | **Lots**<br>**☐ 1 ☒ 2 ☐ 3** | 5439EG2200 (Quaternary Active: 9.9%)<br>5439EG2400 (Quaternary Active: 9.9%) | | |
| | **Preparation** | Tested concentration: LCL<br>Tested Dilution: 4 oz./ 1 gallon defined as 8.93 g +/- 0.03 g test substance + 291.07 g +/- 0.03 g of diluent<br>Diluent: 400 ppm AOAC Synthetic Hard Water | | |
| **Soil load** | | 5% Fetal Bovine Serum | | |
| **Carrier type, # per lot** | | 100 x 15 mm sterile glass Petri dish, 1 per lot | | |
| **Test conditions** | | Contact time: 30 seconds<br>Temperature: 22.0°C<br>Relative humidity: 18.10% | | |
| **Neutralizer** | | Sephadex LH-20 gel column | | |
| **Reviewer comments** (i.e. protocol deviations and amendments, retesting, control failures, etc.) | | No Protocol Amendments or Protocol Deviations were reported. | | |

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| **8.** | **MRID** | 51618808 | | |
| **Study Objective** | | Disinfectant - Virucidal | | |
| **Testing Lab; Lab Study ID** | | Analytical Lab Group – Midwest; A31291 | | |
| **Experimental Start Date** | | 11/23/2020 | **Study Completion Date:** | 4/20/2021 |
| **Test organism(s)**<br>**☒ 1 ☐ 2 ☐ 3 ☐ 4+** | | Vaccinia virus, Strain WR (ATCC VR-119) | | |
| **Indicator Cell Culture** | | Vero cells (ATCC CCL-81) | | |
| **Test Method** | | ASTM E1053-20; Protocol Number: ECO01091720.VAC | | |

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| **Application Method** | | "The carriers were sprayed using 4 sprays, until thoroughly wet, at a distance of 6 to 8 inches, and held covered for the exposure time." |
| **Test Substance Preparation** | **Name/ID** | 920209 |
| | **Lots**<br>**☐ 1 ☒ 2 ☐ 3** | 5439EG2200 (Quaternary Active: 9.9%)<br>5439EG2400 (Quaternary Active: 9.9%) |
| | **Preparation** | Tested concentration: LCL<br>Tested Dilution: 4 oz./ 1 gallon defined as 8.93 g +/- 0.03 g test substance + 291.07 g +/- 0.03 g of diluent<br>Diluent: 400 ppm AOAC Synthetic Hard Water |
| **Soil load** | | 5% Fetal Bovine Serum |
| **Carrier type, # per lot** | | 100 x 15 mm sterile glass Petri dish, 1 per lot |
| **Test conditions** | | Contact time: 30 seconds<br>Temperature: 22.0°C<br>Relative humidity: 16.09% |
| **Neutralizer** | | Sephadex LH-20 gel column |
| **Reviewer comments**<br>(i.e. protocol deviations and amendments, retesting, control failures, etc.) | | No Protocol Amendments or Protocol Deviations were reported. |

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| **9.** | **MRID** | 51618809 | | |
| **Study Objective** | | Disinfectant - Virucidal | | |
| **Testing Lab; Lab Study ID** | | Analytical Lab Group – Midwest; A31318 | | |
| **Experimental Start Date** | | 11/24/2020 | **Study Completion Date:** | 1/8/2021 |
| **Test organism(s)**<br>**☒ 1 ☐ 2 ☐ 3 ☐ 4+** | | Human Rotavirus, Strain WA (ATCC VR-2018) | | |
| **Indicator Cell Culture** | | MA-104 (Rhesus monkey kidney) cells (ATCC CRL-2378.1) | | |
| **Test Method** | | ASTM E1053-20; Protocol Number: ECO01091720.ROT | | |
| **Application Method** | | "The carriers were sprayed using 4 sprays, until thoroughly wet, at a distance of 6 to 8 inches, and held covered for the exposure time." | | |
| **Test Substance Preparation** | **Name/ID** | 920209 | | |
| | **Lots**<br>**☐ 1 ☒ 2 ☐ 3** | 5439EG2200 (Quaternary Active: 9.9%)<br>5439EG2400 (Quaternary Active: 9.9%) | | |
| | **Preparation** | Tested concentration: LCL<br>Tested Dilution: 4 oz./ 1 gallon defined as 8.93 g +/- 0.03 g test substance + 291.07 g +/- 0.03 g of diluent<br>Diluent: 400 ppm AOAC Synthetic Hard Water | | |
| **Soil load** | | 5% Fetal Bovine Serum | | |
| **Carrier type, # per lot** | | 100 x 15 mm sterile glass Petri dish, 1 per lot | | |
| **Test conditions** | | Contact time: 30 seconds<br>Temperature: 21.0°C<br>Relative humidity: 28.59% | | |
| **Neutralizer** | | Sephadex LH-20 gel column | | |

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| **Reviewer comments** (i.e. protocol deviations and amendments, retesting, control failures, etc.) | No Protocol Amendments or Protocol Deviations were reported. |

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| **10.** | **MRID** | 51618810 | | |
| **Study Objective** | | Disinfectant - Virucidal | | |
| **Testing Lab; Lab Study ID** | | Analytical Lab Group – Midwest; A31473 | | |
| **Experimental Start Date** | | 2/15/2021 | **Study Completion Date:** | 6/8/2021 |
| **Test organism(s)** ☒ **1** ☐ **2** ☐ **3** ☐ **4+** | | Duck Hepatitis B virus as a surrogate for Human Hepatitis B virus, Source: Hepadnavirus Testing Inc., Palo Alto, CA | | |
| **Indicator Cell Culture** | | Purified hepatocytes from two-day old Pekin breed hatchling ducks, Source: Metzer Farms by Valley Research Institute (VRI) | | |
| **Test Method** | | ASTM E1053-20; Protocol Number: ECO01091720.ROT | | |
| **Application Method** | | "The carriers were sprayed using 4 sprays, until thoroughly wet, at a distance of 6 to 8 inches, and held covered for the exposure time." | | |
| **Test Substance Preparation** | **Name/ID** | 920209 | | |
| | **Lots** ☐ **1** ☒ **2** ☐ **3** | 5439EG2200 (Quaternary Active: 9.9%)<br>5439EG2400 (Quaternary Active: 9.9%) | | |
| | **Preparation** | Tested concentration: LCL<br>Tested Dilution: 4 oz./ 1 gallon defined as 8.93 g +/- 0.03 g test substance + 291.07 g +/- 0.03 g of diluent<br>Diluent: 400 ppm AOAC Synthetic Hard Water | | |
| **Soil load** | | 5% Fetal Bovine Serum | | |
| **Carrier type, # per lot** | | 100 x 15 mm sterile glass Petri dish, 1 per lot | | |
| **Test conditions** | | Contact time: 30 seconds<br>Temperature: 22.0°C<br>Relative humidity: 5.49% | | |
| **Neutralizer** | | Sephadex LH-20 gel column | | |
| **Reviewer comments** (i.e. protocol deviations and amendments, retesting, control failures, etc.) | | No Protocol Amendments or Protocol Deviations were reported. | | |

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| **11.** | **MRID** | 51618811 | | |
| **Study Objective** | | Disinfectant - Virucidal | | |
| **Testing Lab; Lab Study ID** | | Analytical Lab Group – Midwest; A32029 | | |
| **Experimental Start Date** | | 2/5/2021 | **Study Completion Date:** | 2/24/2021 |
| **Test organism(s)** ☒ **1** ☐ **2** ☐ **3** ☐ **4+** | | Human Immunodeficiency Virus type 1, Strain HTLV-$III_B$ obtained from Advanced Biotechnologies, Inc. Columbia, MD | | |
| **Indicator Cell Culture** | | MT-2 (human T-cell leukemia) cells | | |
| **Test Method** | | ASTM E1053-20; Protocol Number: ECO01092520.HIV | | |

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| **Application Method** | | "The carriers were sprayed using 4 sprays, until thoroughly wet, at a distance of 6 to 8 inches, and held covered for the exposure time." |
| **Test Substance Preparation** | **Name/ID** | 920209 |
| | **Lots**<br>**☐ 1 ☒ 2 ☐ 3** | 5439EG2200 (Quaternary Active: 9.9%)<br>5439EG2400 (Quaternary Active: 9.9%) |
| | **Preparation** | Tested concentration: LCL<br>Tested Dilution: 4 oz./ 1 gallon defined as 8.93 g +/- 0.03 g test substance + 291.07 g +/- 0.03 g of diluent<br>Diluent: 400 ppm AOAC Synthetic Hard Water |
| **Soil load** | | 5% Fetal Bovine Serum |
| **Carrier type, # per lot** | | 100 x 15 mm sterile glass Petri dish, 1 per lot |
| **Test conditions** | | Contact time: 30 seconds<br>Temperature: 21.43°C<br>Relative humidity: 6.46% |
| **Neutralizer** | | Sephadex LH-20 gel column |
| **Reviewer comments** (i.e. protocol deviations and amendments, retesting, control failures, etc.) | | No Protocol Amendments or Protocol Deviations were reported. |

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| **12.** | **MRID** | 51618812 | | |
| **Study Objective** | | Disinfectant - Virucidal | | |
| **Testing Lab; Lab Study ID** | | Analytical Lab Group – Midwest; A31446 | | |
| **Experimental Start Date** | | 12/2/2020 | **Study Completion Date:** | 1/29/2021 |
| **Test organism(s)**<br>**☒ 1 ☐ 2 ☐ 3 ☐ 4+** | | SARS-Related Coronavirus 2, Strain Isolate USA-WA1/2020 (Source: BEI Resources NR-52281) | | |
| **Indicator Cell Culture** | | Vero E6 cells (ATCC CRL-1586) | | |
| **Test Method** | | ASTM E1053-20; Protocol Number: ECO01092920.SARS2.3 | | |
| **Application Method** | | "The carriers were sprayed using 4 sprays, until thoroughly wet, at a distance of 6 to 8 inches, and held covered for the exposure time." | | |
| **Test Substance Preparation** | **Name/ID** | 920209 | | |
| | **Lots**<br>**☐ 1 ☐ 2 ☒ 3** | 5439EG2200 (Quaternary Active: 9.9%)<br>5439EG2400 (Quaternary Active: 9.9%)<br>5439EG2600 (Quaternary Active: 10.0%) | | |
| | **Preparation** | Tested concentration: LCL<br>Tested Dilution: 4 oz./ 1 gallon defined as 8.93 g +/- 0.03 g test substance + 291.07 g +/- 0.03 g of diluent<br>Diluent: 400 ppm AOAC Synthetic Hard Water | | |
| **Soil load** | | 5% Fetal Bovine Serum | | |
| **Carrier type, # per lot** | | 100 x 15 mm sterile glass Petri dish, 1 per lot | | |
| **Test conditions** | | Contact time: 10 seconds<br>Temperature: 18.85°C<br>Relative humidity: 17.82% | | |
| **Neutralizer** | | Sephadex LH-20 gel column | | |

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| **Reviewer comments** (i.e. protocol deviations and amendments, retesting, control failures, etc.) | No Protocol Amendments or Protocol Deviations were reported. |

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| **12.** | **MRID** | 51618812 | | |
| **Study Objective** | | Disinfectant - Virucidal | | |
| **Testing Lab; Lab Study ID** | | Analytical Lab Group – Midwest; A31446 | | |
| **Experimental Start Date** | | 12/2/2020 | **Study Completion Date:** | 1/29/2021 |
| **Test organism(s)** ☒ **1** ☐ **2** ☐ **3** ☐ **4+** | | SARS-Related Coronavirus 2, Strain Isolate USA-WA1/2020 (Source: BEI Resources NR-52281) | | |
| **Indicator Cell Culture** | | Vero E6 cells (ATCC CRL-1586) | | |
| **Test Method** | | ASTM E1053-20; Protocol Number: ECO01092920.SARS2.3 | | |
| **Application Method** | | "The carriers were sprayed using 4 sprays, until thoroughly wet, at a distance of 6 to 8 inches, and held covered for the exposure time." | | |
| **Test Substance Preparation** | **Name/ID** | 920209 | | |
| | **Lots** ☐ **1** ☐ **2** ☒ **3** | 5439EG2200 (Quaternary Active: 9.9%)<br>5439EG2400 (Quaternary Active: 9.9%)<br>5439EG2600 (Quaternary Active: 10.0%) | | |
| | **Preparation** | Tested concentration: LCL<br>Tested Dilution: 4 oz./ 1 gallon defined as 2.97 g +/- 0.03 g test substance + 97.03 g +/- 0.03 g of diluent<br>Diluent: 400 ppm AOAC Synthetic Hard Water | | |
| **Soil load** | | 5% Fetal Bovine Serum | | |
| **Carrier type, # per lot** | | 100 x 15 mm sterile glass Petri dish, 1 per lot | | |
| **Test conditions** | | Contact time: 10 seconds<br>Temperature: 18.85°C<br>Relative humidity: 17.82% | | |
| **Neutralizer** | | Sephadex LH-20 gel column | | |
| **Reviewer comments** (i.e. protocol deviations and amendments, retesting, control failures, etc.) | | No Protocol Amendments or Protocol Deviations were reported. | | |

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| **13.** | **MRID** | 51618813 | | |
| **Study Objective** | | Disinfectant - Bactericidal | | |
| **Testing Lab; Lab Study ID** | | Analytical Lab Group – Midwest; A31536 | | |
| **Experimental Start Date** | | 12/9/2020 | **Study Completion Date:** | 12/16/2020 |
| **Test organism(s)** ☒ **1** ☐ **2** ☐ **3** ☐ **4+** | | *Bordetella bronchiseptica* (ATCC 10580) | | |
| **Test Method** | | ASTM E1053-20; Protocol Number: ECO01100720.GS.1 | | |
| **Application Method** | | "The carriers were sprayed using 4 sprays, until thoroughly wet, at a distance of 6 to 8 inches, and held covered for the exposure time." | | |
| | **Name/ID** | 920209 | | |

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| **Test Substance Preparation** | **Lots**<br>**☐ 1 ☒ 2 ☐ 3** | 5439EG2200 (Quaternary Active: 9.9%)<br>5439EG2400 (Quaternary Active: 9.9%) |
| | **Preparation** | Tested concentration: LCL<br>Tested Dilution: 4 oz./ 1 gallon defined as 8.93 g +/- 0.03 g test substance + 291.07 g +/- 0.03 g of diluent<br>Diluent: 400 ppm AOAC Synthetic Hard Water |
| **Soil load** | | 5% Fetal Bovine Serum |
| **Carrier type, # per lot** | | Glass slides (18 mm x 36 mm), 10 per lot |
| **Test conditions** | | Contact time: 3 minutes<br>Temperature: 19°C<br>Relative humidity: 7% |
| **Neutralizer** | | Letheen Broth + 0.14% Lecithin + 1.0% Tween 80 + 0.1% Sodium Thiosulfate |
| **Reviewer comments** (i.e. protocol deviations and amendments, retesting, control failures, etc.) | | Protocol Amendment: Page 10 of the protocol was amended to clarify that a supplemental information form was attached.<br><br>No Protocol Deviations were reported. |

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| **14.** | **MRID** | 51618814 | | |
| **Study Objective** | | Disinfectant - Bactericidal | | |
| **Testing Lab; Lab Study ID** | | Analytical Lab Group – Midwest; A31535 | | |
| **Experimental Start Date** | | 12/14/2020 | **Study Completion Date:** | 5/17/2021 |
| **Test organism(s)**<br>**☒ 1 ☐ 2 ☐ 3 ☐ 4+** | | *Bordetella pertussis* (ATCC 12743) | | |
| **Test Method** | | AOAC 961.02; Protocol Number: ECO01100720.GS.2 | | |
| **Application Method** | | "The carriers were sprayed using 4 sprays, until thoroughly wet, at a distance of 6 to 8 inches, and held covered for the exposure time." | | |
| **Test Substance Preparation** | **Name/ID** | 920209 | | |
| | **Lots**<br>**☐ 1 ☒ 2 ☐ 3** | 5439EG2200 (Quaternary Active: 9.9%)<br>5439EG2400 (Quaternary Active: 9.9%) | | |
| | **Preparation** | Tested concentration: LCL<br>Tested Dilution: 4 oz./ 1 gallon defined as 8.93 g +/- 0.03 g test substance + 291.07 g +/- 0.03 g of diluent<br>Diluent: 400 ppm AOAC Synthetic Hard Water | | |
| **Soil load** | | 5% Fetal Bovine Serum | | |
| **Carrier type, # per lot** | | Glass slides (18 mm x 36 mm), 10 per lot | | |
| **Test conditions** | | Contact time: 3 minutes<br>Temperature: 20°C<br>Relative humidity: 24% | | |
| **Neutralizer** | | Letheen Broth + 0.14% Lecithin + 1.0% Tween 80 + 0.1% Sodium Thiosulfate | | |
| **Reviewer comments** (i.e. protocol deviations and amendments, retesting, control failures, etc.) | | No Protocol Amendments were reported.<br><br>Protocol Deviations:<br>*"The protocol specified that the 2-line spray setting should be used on the sprayer for the test. In testing on* | | |

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| | *December 14, 2020, and January 15, 2021, this was not recorded in the raw data. Although the spray setting could not be verified, the test substance demonstrated passing efficacy. Therefore, this deviation has no impact on the overall intent of the protocol."*<br><br>*"The protocol attachment requested measurement of spray weights. In testing on December 14, 2020, and January 15, 2021, the technicians did not record the total number of sprays used to complete the measurement of spray weights, the technicians recorded the number of sprays for the test in the raw data as specified by the protocol. The protocol attachments says, "spray the dish for the specified time or for the required number of trigger sprays at the specified distance." The protocol specifies 4 sprays at a distance of 6-8 inches. Therefore, because the technicians followed the protocol in testing, and this spray weight measurement does not affect the efficacy results of the test substance, this deviation had no impact on the overall intent of the protocol."*<br><br>*"Unforeseen Circumstances*<br>*The protocol states that the acceptance criteria for the carrier population control is 4.0-5.0 Log10. In testing on December 14, 2020, the carrier population control was < 3.50 Log10, which was below the upper limit and therefore did not meet the acceptance criteria. It was determined that the protocol was followed and performed correctly as all other controls met acceptance criteria. This data is invalid and presented in Attachment I."*<br><br>*"Therefore the test was repeated on January 15, 2021 with no organism dilution. This data is valid and presented in the body of this report."* |

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| **15.** | **MRID** | 51618815 | | |
| **Study Objective** | | Disinfectant - Virucidal | | |
| **Testing Lab; Lab Study ID** | | Bioscience Laboratories, Inc.; 2010738-404 | | |
| **Experimental Start Date** | | 2/1/2020 | **Study Completion Date:** | 3/16/2021 |
| **Test organism(s)**<br>**☒ 1 ☐ 2 ☐ 3 ☐ 4+** | | Measles virus, strain Edmonston (ATCC VR-24) | | |
| **Indicator Cell Culture** | | Vero cells (ATCC CCL-81) | | |
| **Test Method** | | ASTM E1053-20; Protocol Number: 2010738-404 | | |
| **Application Method** | | "The test formulation was applied to each carrier by spraying four times from a distance of 6 to 8 inches using the 2-line spray setting on the sprayer. Sufficient test formulation was applied to ensure that the carrier was thoroughly wetted." | | |
| | **Name/ID** | 920209 | | |

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| **Test Substance Preparation** | **Lots** ☐ 1 ☒ 2 ☐ 3 | 5439EG2200 (Quaternary Active: 9.9%)<br>5439EG2400 (Quaternary Active: 9.9%) |
| | **Preparation** | Tested concentration: LCL<br>Tested Dilution: 4 oz./ 1 gallon defined as 8.93 g +/- 0.03 g test substance + 291.07 g +/- 0.03 g of diluent<br>Diluent: 400 ppm AOAC Synthetic Hard Water |
| **Soil load** | | 5% Heat Inactivated Fetal Bovine Serum |
| **Carrier type, # per lot** | | 100 x 15 mm sterile glass Petri dish, 1 per lot |
| **Test conditions** | | Contact time: 30 seconds<br>Temperature: 22.5 to 22.7°C<br>Relative humidity: 15.32 to 17.40% |
| **Neutralizer** | | Dey-Engley (D/E) Broth |
| **Reviewer comments** (i.e. protocol deviations and amendments, retesting, control failures, etc.) | | Protocol Amendments:<br>"Two amendments were made in the course of this evaluation.<br><br>The Protocol #20010738-404 was changed to correct a typographical error.<br><br>The Canadian guidance document, *Guidance document – Safety and efficacy requirements for hard surface disinfectant drugs (January, 2014) was replaced with Health Canada Guidance document – Safety and efficacy requirement for hard surface disinfectant drugs (2020)."*<br><br>*Protocol Deviations:*<br>*"One deviation to the Study Protocol occurred during this evaluation.*<br><br>*Section 23.3.7 of the protocol states, "The plates will be incubated for 5 to 14 days at 37°C ± 2°C in a CO2 incubator." On 12/08/2020 the plates were removed from the incubator after a 19 day incubation. The plates needed a longer incubation for sufficient cytopathic effect of the virus to occur. There was no adverse effect on the study. All acceptance criteria were met."* |

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| **16.** | **MRID** | 51618816 | | |
| **Study Objective** | | Disinfectant - Virucidal | | |
| **Testing Lab; Lab Study ID** | | Ecolab; 2100005 | | |
| **Experimental Start Date** | | 2/10/2021 | **Study Completion Date:** | 5/18/2021 |
| **Test organism(s)** ☒ 1 ☐ 2 ☐ 3 ☐ 4+ | | Human Herpes Simplex Virus Type 1, Strain F (ATCC VR-733) | | |
| **Indicator Cell Culture** | | Vero cells (Source: Quidel (Diagnostic Hybrids) | | |
| **Test Method** | | ASTM E1053-20; Protocol Number: MS505 Version 5.0 | | |
| **Application Method** | | "Spray: Application of 4 sprays from a distance of about 6-8 inches (visually estimated)" | | |
| | **Name/ID** | 920209 | | |

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| **Test Substance Preparation** | **Lots**<br>**☐ 1 ☒ 2 ☐ 3** | 5439EG2200 (Quaternary Active: 9.9%)<br>5439EG2400 (Quaternary Active: 9.9%) |
| | **Preparation** | Tested concentration: LCL<br>Tested Dilution: 4 oz./ 1 gallon defined as 8.93 g +/- 0.03 g test substance + 291.07 g +/- 0.03 g of diluent<br>Diluent: 400 ppm AOAC Synthetic Hard Water |
| **Soil load** | | 5% Heat Inactivated Fetal Bovine Serum |
| **Carrier type, # per lot** | | 100 x 15 mm sterile glass Petri dish, 1 per lot |
| **Test conditions** | | Contact time: 30 seconds<br>Temperature: 15-30°C<br>Relative humidity: Not provided |
| **Neutralizer** | | Sephadex LH-20 gel column |
| **Reviewer comments** (i.e. protocol deviations and amendments, retesting, control failures, etc.) | | No Protocol Amendments or Protocol Deviations were reported.<br><br>Note: Relative humidity was not reported. |

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| **17.** | **MRID** | 51618817 | | |
| **Study Objective** | | Disinfectant - Virucidal | | |
| **Testing Lab; Lab Study ID** | | Ecolab; 2100009 | | |
| **Experimental Start Date** | | 2/12/2021 | **Study Completion Date:** | 5/25/2021 |
| **Test organism(s)**<br>**☒ 1 ☐ 2 ☐ 3 ☐ 4+** | | Herpes Simplex Virus type 2, Strain G (ATCC VR-734) | | |
| **Indicator Cell Culture** | | Vero cells (Source: Quidel (Diagnostic Hybrids) | | |
| **Test Method** | | ASTM E1053-20; Protocol Number: MS505 Version 5.0 | | |
| **Application Method** | | “Spray: Application of 4 sprays from a distance of about 6-8 inches (visually estimated)” | | |
| **Test Substance Preparation** | **Name/ID** | 920209 | | |
| | **Lots**<br>**☐ 1 ☒ 2 ☐ 3** | 5439EG2200 (Dodecylbenzenesulfonic Acid: 9.9%)<br>5439EG2400 (Dodecylbenzenesulfonic Acid: 9.9%) | | |
| | **Preparation** | Tested concentration: LCL<br>Tested Dilution: 4 oz./ 1 gallon defined as<br>5439EG2200: 8.91 g +/- 0.03 g test substance + 291.06 g +/- 0.03 g of diluent<br>5439EG2400: 8.90 g +/- 0.03 g test substance + 291.05 g +/- 0.03 g of diluent<br>Diluent: 400 ppm AOAC Synthetic Hard Water | | |
| **Soil load** | | 5% Heat Inactivated Fetal Bovine Serum | | |
| **Carrier type, # per lot** | | Glass Petri dish, 1 per lot | | |
| **Test conditions** | | Contact time: 30 seconds<br>Temperature: 15-30°C<br>Relative humidity: Not provided | | |
| **Neutralizer** | | Sephadex LH-20 gel column | | |
| **Reviewer comments** (i.e. protocol deviations and amendments, retesting, control failures, etc.) | | No Protocol Amendments or Protocol Deviations were reported.<br><br>Note: Relative humidity was not reported. | | |

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| **18.** | **MRID** | 51618818 | | |
| **Study Objective** | | Disinfectant - Virucidal | | |
| **Testing Lab; Lab Study ID** | | Ecolab; 2100014 | | |
| **Experimental Start Date** | | 2/12/2021 | **Study Completion Date:** | 5/18/2021 |
| **Test organism(s)**<br>**☒ 1 ☐ 2 ☐ 3 ☐ 4+** | | Human Adenovirus Type 5 (ATCC VR-5) | | |
| **Indicator Cell Culture** | | HeLa cells (Source: Quidel (Diagnostic Hybrids) | | |
| **Test Method** | | ASTM E1053-20; Protocol Number: MS505 Version 5.0 | | |
| **Application Method** | | Spray: "Application of 4 sprays from a distance of about 6-8 inches (visually estimated)" | | |
| **Test Substance Preparation** | **Name/ID** | 920209 | | |
| | **Lots**<br>**☐ 1 ☐ 2 ☒ 3** | 5439EG2200 (Dodecylbenzenesulfonic Acid: 9.9%)<br>5439EG2400 (Dodecylbenzenesulfonic Acid: 9.9%)<br>5439EG2600 (Dodecylbenzenesulfonic Acid: 10.0%) | | |
| | **Preparation** | Tested concentration: LCL<br>Tested Dilution: 4 oz./ 1 gallon defined as<br>5439EG2200: 8.91 g +/- 0.03 g test substance + 291.06 g +/- 0.03 g of diluent<br>5439EG2400: 8.90 g +/- 0.03 g test substance + 291.05 g +/- 0.03 g of diluent<br>5439EG2600: 8.93 g +/- 0.03 g test substance + 291.15 g +/- 0.03 g of diluent<br>Diluent: 400 ppm AOAC Synthetic Hard Water | | |
| **Soil load** | | 5% Heat Inactivated Fetal Bovine Serum | | |
| **Carrier type, # per lot** | | Glass Petri dish, 1 per lot | | |
| **Test conditions** | | Contact time: 30 seconds<br>Temperature: 15-30°C<br>Relative humidity: Not provided | | |
| **Neutralizer** | | Sephadex LH-20 gel column | | |
| **Reviewer comments**<br>(i.e. protocol deviations and amendments, retesting, control failures, etc.) | | Protocol Amendments<br>"1. 2100014-1A<br>• The protocol was amended to change the second paragraph of the Test Substance Stability & Characterization section to state the following:<br><br>The chemical quality of the test substance was verified and found to be acceptable prior to use in this study under Ecolab GLP study number 1900113.<br>• The protocol was amended to update the Health Canada reference in Test Method Requirement and Test System Justification section to "Health Canada Guidance Document – Safety and Efficacy Requirements for Surface Disinfectant Drugs (April 2020)."<br>• The protocol was amended to update the Interpretation of Test Results section to the following:<br><br>To achieve a broad-spectrum virucidal claim for Health Canada and EPA virucidal claim: | | |

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| | • A minimum recoverable virus end point titer of ≥ 104.80 (4.80 log10 or 6.3 × 104 viable viral particles) per test carrier/surface is required.<br>• The test substance should demonstrate a ≥ 3 log10 reduction for each surface beyond the level of cytotoxicity, if present.<br>• The Statement of Proposed Statistical Method section is being updated to the following:<br><br>The Spearman-Kärber method will be used to calculate the TCID50 or TCD50 for the test and control results."<br><br>No Protocol Deviations were reported.<br><br>Note: Relative humidity was not reported. |

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| **19.** | **MRID** | 51618819 | | |
| **Study Objective** | | Soft Surface Disinfectant - Bactericidal | | |
| **Testing Lab; Lab Study ID** | | Ecolab; 2100015 | | |
| **Experimental Start Date** | | 5/24/2021 | **Study Completion Date:** | 7/1/2021 |
| **Test organism(s)**<br>**☐ 1 ☒ 2 ☐ 3 ☐ 4+** | | *Staphylococcus aureus* (ATCC 6538)<br>*Pseudomonas aeruginosa* (ATCC 15442) | | |
| **Test Method** | | AOAC 961.02; Protocol Number: MS010 Version 5.0 | | |
| **Application Method** | | Spray application of 4 trigger pulls from a distance of about 6-8 inches (visually estimated) | | |
| **Test Substance Preparation** | **Name/ID** | 920209 | | |
| | **Lots**<br>**☐ 1 ☐ 2 ☒ 3** | 5439EG2200 (Dodecylbenzenesulfonic Acid: 9.9%)<br>5439EG2400 (Dodecylbenzenesulfonic Acid: 9.9%)<br>5439EG2600 (Dodecylbenzenesulfonic Acid: 10.0%) | | |
| | **Preparation** | Tested concentration: LCL<br>Tested Dilution: 6 oz./ 1 gallon defined as<br>5439EG2200: 22.32 g +/- 0.03 g test substance + 477.68 g +/- 0.03 g of diluent<br>5439EG2400: 22.32 g +/- 0.03 g test substance + 477.68g +/- 0.03 g of diluent<br>5439EG2600: 22.10 g +/- 0.03 g test substance + 477.90 g +/- 0.03 g of diluent<br>Diluent: 400 ppm AOAC Synthetic Hard Water | | |
| **Soil load** | | 5% Fetal Bovine Serum | | |
| **Carrier type, # per lot** | | 25 mm x 25 mm fabric carriers<br>1" x 1" natural fabric carriers (100% cotton) and<br>1" x 1" synthetic fabric carriers (100% polyester),<br>60 carriers per lot | | |
| **Test conditions** | | Contact time: 10 minutes<br>Temperature: 15-30°C<br>Relative humidity: Not provided | | |
| **Neutralizer** | | Letheen Broth | | |
| **Reviewer comments** | | Protocol Amendments | | |

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| (i.e. protocol deviations and amendments, retesting, control failures, etc.) | "1. 2100015-1A – The protocol was amended to correct a typographical error in the table on page 3. For batch 5439EG2600, the batch number was incorrectly listed as "g5439EG2600". The protocol was amended to remove the "g" from the batch number."<br><br>No Protocol Deviations were reported.<br><br>Note: Relative humidity was not reported. |

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| **20.** | **MRID** | 51618820 | | |
| **Study Objective** | | Soft Surface Disinfectant - Virucidal | | |
| **Testing Lab; Lab Study ID** | | Ecolab; 2100020 | | |
| **Experimental Start Date** | | 6/16/2021 | **Study Completion Date:** | 7/1/2021 |
| **Test organism(s)**<br>**☒ 1 ☐ 2 ☐ 3 ☐ 4+** | | Feline calicivirus, Strain F-9 (ATCC CR-782) | | |
| **Indicator Cell Culture** | | CRFK (feline kidney) cells (ATCC CCL-94) | | |
| **Test Method** | | ASTM E1053; Protocol Number: MS505 Version 5.0 | | |
| **Application Method** | | Spray application of 4 trigger pulls from a distance of about 6-8 inches (visually estimated) | | |
| **Test Substance Preparation** | **Name/ID** | 920209 | | |
| | **Lots**<br>**☐ 1 ☒ 2 ☐ 3** | 5439EG2200 (Dodecylbenzenesulfonic Acid: 9.9%)<br>5439EG2400 (Dodecylbenzenesulfonic Acid: 9.9%) | | |
| | **Preparation** | Tested concentration: LCL<br>Tested Dilution: 6 oz./ 1 gallon defined as 13.39 g +/- 0.03 g test substance + 286.61 g +/- 0.03 g of diluent<br>Diluent: 400 ppm AOAC Synthetic Hard Water | | |
| **Soil load** | | 5% Fetal Bovine Serum | | |
| **Carrier type, # per lot** | | 25 mm x 25 mm fabric carriers<br>1" x 1" natural fabric carriers (100% cotton) and<br>1" x 1" synthetic fabric carriers (100% polyester),<br>2 carriers per lot | | |
| **Test conditions** | | Contact time: 5 minutes<br>Temperature: 15-30°C<br>Relative humidity: Not provided | | |
| **Neutralizer** | | Chemical neutralization with 5% FBS in EMEM with antibiotics followed by passing 5 mL through a Sephadex column | | |
| **Reviewer comments**<br>(i.e. protocol deviations and amendments, retesting, control failures, etc.) | | Protocol Amendments<br>"2100020-1A – The protocol was amended to change the number of batches of test substance to be tested from three to two with the removal of 920209 batch 5439EG2600 from the protocol. Note that on page 3 of the protocol, the batch number was incorrectly listed as g5439EG2600 in the table. Per the guidelines OCSPP 810.2200 for virucidal claims, only two batches are needed to be tested."<br><br>No Protocol Deviations were reported. | | |

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| | Note: Relative humidity was not reported. |

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| **21.** | **MRID** | 51618821 | | |
| **Study Objective** | | Disinfectant - Virucidal | | |
| **Testing Lab; Lab Study ID** | | Ecolab; 2100064 | | |
| **Experimental Start Date** | | 6/15/2021 | **Study Completion Date:** | 7/1/2021 |
| **Test organism(s)**<br>**☒ 1 ☐ 2 ☐ 3 ☐ 4+** | | Human Adenovirus Type 5 (ATCC VR-5) | | |
| **Indicator Cell Culture** | | HeLa cells (ATCC CCL-2) | | |
| **Test Method** | | ASTM E1053; Protocol Number: MS505 Version 5.0 | | |
| **Application Method** | | Spray application of 4 trigger pulls from a distance of about 6-8 inches (visually estimated) | | |
| **Test Substance Preparation** | **Name/ID** | 920209 | | |
| | **Lots**<br>**☐ 1 ☒ 2 ☐ 3** | 5439EG2200 (Dodecylbenzenesulfonic Acid: 9.9%)<br>5439EG2400 (Dodecylbenzenesulfonic Acid: 9.9%) | | |
| | **Preparation** | Tested concentration: LCL<br>Tested Dilution: 6 oz./ 1 gallon defined as 13.39 g +/- 0.03 g test substance + 286.61 g +/- 0.03 g of diluent<br>Diluent: 400 ppm AOAC Synthetic Hard Water | | |
| **Soil load** | | 5% Fetal Bovine Serum | | |
| **Carrier type, # per lot** | | 25 mm x 25 mm fabric carriers<br>1” x 1” natural fabric carriers (100% cotton) and<br>1” x 1” synthetic fabric carriers (100% polyester),<br>1 carrier per lot | | |
| **Test conditions** | | Contact time: 10 minutes<br>Temperature: 15-30°C<br>Relative humidity: Not provided | | |
| **Neutralizer** | | “Chemical neutralization with 5% FBS in EMEM with antibiotics followed by passing 5 mL through a Sephadex column” | | |
| **Reviewer comments** (i.e. protocol deviations and amendments, retesting, control failures, etc.) | | No Protocol Amendments or Protocol Deviations were reported.<br><br>Note: Relative humidity during test exposure was not reported. | | |

**MRID 51618822 was not reviewed. The study is an accelerated storage stability data for the use solution after dilution with hard water. The agency does not have guidance or standards to review the study under the reported conditions to support use-solution stability.**

## IV. STUDY RESULTS

**Disinfection – Virucidal Efficacy**

| MRID | Organism | Description | Results | | Dried Virus Control $Log_{10}$ ($TCID_{50}$/ carrier) |
|---|---|---|---|---|---|
| | | | Lot 5439EG2200 | Lot 5439EG2400 | |
| *4 oz./ 1 gallon defined as 8.93 g +/- 0.03 g test substance + 291.07 g +/- 0.03 g of 400 ppm AOAC Synthetic Hard Water, Spray, 30-second contact time, 5% organic load present* | | | | | |
| 51618801 | Bovine Viral Diarrhea Virus (BVDV) (ATCC VR-1422) as a surrogate for Human Hepatitis C Virus | Replicate | 1 2 | 1 2 | 1 2 |
| | | $10^{-1}$ to $10^{-4}$ dilution | Complete inactivation | Complete inactivation | 5.44 5.44 |
| | | $Log_{10}$ $TCID_{50}$/ 100 µl | ≤ 0.50 | ≤ 0.50 | |
| | | $Log_{10}$ $TCID_{50}$/ carrier | ≤ 0.80 | ≤ 0.80 | |
| | | $Log_{10}$ Reduction | ≥ 4.64 | ≥ 4.64 | |
| 51618802 | Respiratory Syncytial Virus (RSV), Strain Long (ATCC VR-26) | $10^{-1}$ to $10^{-6}$ dilution | Complete inactivation | Complete inactivation | 5.05 |
| | | $Log_{10}$ $TCID_{50}$/100 µl | ≤ 0.50 | ≤ 0.50 | |
| | | $Log_{10}$ $TCID_{50}$/carrier | ≤ 0.80 | ≤ 0.80 | |
| | | Log Reduction | ≥ 4.25 | ≥ 4.25 | |
| 51618803 | Canine Distemper Virus, Strain Lederle (ATCC VR-128) | $10^{-1}$ to $10^{-7}$ dilution | Complete inactivation | Complete inactivation | 6.80 |
| | | $Log_{10}$ $TCID_{50}$/100 µl | ≤ 0.50 | ≤ 0.50 | |
| | | $Log_{10}$ $TCID_{50}$/carrier | ≤ 0.80 | ≤ 0.80 | |
| | | Log Reduction | ≥ 6.00 | ≥ 6.00 | |
| 51618804 | Canine Parvovirus, Strain Cornell-780916-80 (ATCC VR-2017) | $10^{-1}$ to $10^{-2}$ dilution | Viral infectivity | Complete inactivation | 6.05 |
| | | $10^{-3}$ to $10^{-6}$ dilution | Complete inactivation | Complete inactivation | |
| | | $Log_{10}$ $TCID_{50}$/100 µl | 2.50 | ≤ 0.50 | |
| | | $Log_{10}$ $TCID_{50}$/carrier | 2.80 | ≤ 0.80 | |
| | | Log Reduction | 3.25 | ≥ 5.25 | |
| 51618805 | Human Coronavirus, Strain 229E (ATCC VR-740) | $10^{-1}$ to $10^{-6}$ dilution | Complete inactivation | Complete inactivation | 5.05 |
| | | $Log_{10}$ $TCID_{50}$/100 µl | ≤ 0.50 | ≤ 0.50 | |

| MRID | Organism | Description | Results | | Dried Virus Control $Log_{10}$ ($TCID_{50}$/ carrier) |
|---|---|---|---|---|---|
| | | | Lot 5439EG2200 | Lot 5439EG2400 | |
| *4 oz./ 1 gallon defined as 8.93 g +/- 0.03 g test substance + 291.07 g +/- 0.03 g of 400 ppm AOAC Synthetic Hard Water, Spray, 30-second contact time, 5% organic load present* | | | | | |
| | | $Log_{10}$ $TCID_{50}$/carrier | ≤ 0.80 | ≤ 0.80 | |
| | | Log Reduction | ≥ 4.25 | ≥ 4.25 | |
| 51618806 | Feline Panleukopenia virus, Strain Philips-Roxane (ATCC VR-648) | $10^{-1}$ dilution | Viral infectivity | Viral infectivity | 4.80 |
| | | $10^{-2}$ dilution | Viral infectivity | Complete inactivation | |
| | | $10^{-3}$ to $10^{-6}$ dilution | Complete inactivation | Complete inactivation | |
| | | $Log_{10}$ $TCID_{50}$/100 µl | 1.50 | 0.75 | |
| | | $Log_{10}$ $TCID_{50}$/carrier | 1.80 | 1.05 | |
| | | Log Reduction | 3.00 | 3.75 | |
| 51618807 | Poliovirus type 1, Strain Chat (ATCC VR-1562) | $10^{-1}$ to $10^{-6}$ dilution | Complete inactivation | Complete inactivation | 5.80 |
| | | $Log_{10}$ $TCID_{50}$/100 µl | ≤ 0.50 | ≤ 0.50 | |
| | | $Log_{10}$ $TCID_{50}$/carrier | ≤ 0.80 | ≤ 0.80 | |
| | | Log Reduction | ≥ 5.00 | ≥ 5.00 | |
| 51618808 | Vaccinia virus, Strain WR (ATCC VR-119) | $10^{-1}$ to $10^{-7}$ dilution | Complete inactivation | Complete inactivation | 6.30 |
| | | $Log_{10}$ $TCID_{50}$/100 µl | ≤ 0.50 | ≤ 0.50 | |
| | | $Log_{10}$ $TCID_{50}$/carrier | ≤ 0.80 | ≤ 0.80 | |
| | | Log Reduction | ≥ 5.50 | ≥ 5.50 | |
| 51618809 | Human Rotavirus, Strain WA (ATCC VR-2018) | $10^{-1}$ to $10^{-7}$ dilution | Complete inactivation | Complete inactivation | 6.55 |
| | | $Log_{10}$ $TCID_{50}$/100 µl | ≤ 0.50 | ≤ 0.50 | |
| | | $Log_{10}$ $TCID_{50}$/carrier | ≤ 0.80 | ≤ 0.80 | |
| | | Log Reduction | ≥ 5.50 | ≥ 5.50 | |
| 51618810 | | Replicate | 1 2 | 1 2 | 1 2 |

| MRID | Organism | Description | Results | | Dried Virus Control $Log_{10}$ ($TCID_{50}$/ carrier) |
|---|---|---|---|---|---|
| | | | Lot 5439EG2200 | Lot 5439EG2400 | |
| *4 oz./ 1 gallon defined as 8.93 g +/- 0.03 g test substance + 291.07 g +/- 0.03 g of 400 ppm AOAC Synthetic Hard Water, Spray, 30-second contact time, 5% organic load present* | | | | | |
| | Duck Hepatitis B virus as a surrogate for Human Hepatitis B virus, Source: Hepadnavirus Testing Inc., Palo Alto, CA | $10^{-1}$ dilution | Cytotoxicity | Cytotoxicity / Complete inactivation | 5.90 |
| | | $10^{-2}$ to $10^{-4}$ dilution | Complete inactivation | Complete inactivation | |
| | | $Log_{10}$ $TCID_{50}$/ 250 µl | ≤ 1.50 | ≤ 1.24 | |
| | | $Log_{10}$ $TCID_{50}$/ carrier | ≤ 1.40 | ≤ 1.14 | |
| | | $Log_{10}$ Reduction | ≥ 4.50 | ≥ 4.76 | |
| 51618811 | Human Immunodeficiency Virus type 1, Strain $HTLV\text{-}III_B$ obtained from Advanced Biotechnologies, Inc. Columbia, MD | $10^{-1}$ to $10^{-7}$ dilution | Complete inactivation | Complete inactivation | 5.00 |
| | | $Log_{10}$ $TCID_{50}$/200 µl | ≤ 0.50 | ≤ 0.50 | |
| | | $Log_{10}$ $TCID_{50}$/carrier | ≤ 0.50 | ≤ 0.50 | |
| | | Log Reduction | ≥ 4.50 | ≥ 4.50 | |
| 51618815 | Measles virus, strain Edmonston (ATCC VR-24) | $10^{-2}$ dilution | Cytotoxicity | Cytotoxicity | 5.30 |
| | | $10^{-3}$ to $10^{-7}$ dilution | Complete inactivation | Complete inactivation | |
| | | $Log_{10}$ $TCID_{50}$/ml | ≤ 2.50 | ≤ 2.50 | |
| | | $Log_{10}$ $TCID_{50}$/carrier | ≤ 1.80 | ≤ 1.80 | |
| | | Log Reduction | ≥ 3.50 | ≥ 3.50 | |
| | | Percent Reduction | > 99.97 | > 99.97 | |
| 51618816 No RH | Human Herpes Simplex Virus Type 1, Strain F (ATCC VR-733) | $10^{-1}$ to $10^{-5}$ dilution | Complete inactivation | Complete inactivation | 5.05 |
| | | $Log_{10}$ $TCID_{50}$/ 0.1 ml | ≤ 0.50 | ≤ 0.50 | |
| | | $Log_{10}$ $TCID_{50}$/carrier | ≤ 0.80 | ≤ 0.80 | |
| | | Log Reduction | ≥ 4.25 | ≥ 4.25 | |
| 51618817 No RH | Herpes Simplex Virus type 2, Strain G (ATCC VR-734) | $10^{-1}$ to $10^{-5}$ dilution | Complete inactivation | Complete inactivation | 4.80 |
| | | $Log_{10}$ $TCID_{50}$/ 0.1 ml | ≤ 0.50 | ≤ 0.50 | |

| MRID | Organism | Description | Results | | Dried Virus Control $Log_{10}$ ($TCID_{50}$/ carrier) |
|---|---|---|---|---|---|
| | | | Lot 5439EG2200 | Lot 5439EG2400 | |
| *4 oz./ 1 gallon defined as 8.93 g +/- 0.03 g test substance + 291.07 g +/- 0.03 g of 400 ppm AOAC Synthetic Hard Water, Spray, 30-second contact time, 5% organic load present* | | | | | |
| | | $Log_{10}$ $TCID_{50}$/carrier | ≤ 0.80 | ≤ 0.80 | |
| | | Log Reduction | ≥ 4.00 | ≥ 4.00 | |

Note: The filtrates were considered the $10^{-1}$ dilution.
*Log reduction per volume inoculated per well and per carrier.

**Disinfection – Virucidal Efficacy:** SARS-Related Coronavirus 2, Strain Isolate USA-WA1/2020 (Source: BEI Resources NR-52281)

| MRID | Organism | Description | Results | | | Dried Virus Control ($Log_{10}$ $TCID_{50}$/ carrier) |
|---|---|---|---|---|---|---|
| | | | Lot 5439EG2200 | Lot 5439EG2400 | Lot 5439EG2600 | |
| *4 oz./ 1 gallon defined as 2.97 g +/- 0.03 g test substance + 97.03 g +/- 0.03 g of 400 ppm AOAC Synthetic Hard Water, Spray, 10-second contact time, 5% fetal bovine serum present* | | | | | | |
| 51618812 | SARS-Related Coronavirus 2, Strain Isolate USA-WA1/2020 (Source: BEI Resources NR-52281) | $10^{-1}$ to $10^{-6}$ dilution | Complete inactivation | Complete inactivation | Complete inactivation | 6.30 |
| | | $Log_{10}$ $TCID_{50}$/100 µl | ≤ 0.50 | ≤ 0.50 | ≤ 0.50 | |
| | | $Log_{10}$ $TCID_{50}$/carrier | ≤ 0.80 | ≤ 0.80 | ≤ 0.80 | |
| | | Log Reduction | ≥ 5.50 | ≥ 5.50 | ≥ 5.50 | |

**Disinfection – Bactericidal Efficacy:** *Bordetella bronchiseptica* (ATCC 10580)

| MRID | Organism | Results | | Population Control Average $Log_{10}$ CFU/ carrier |
|---|---|---|---|---|
| | | Lot. No. | No. Exhibiting Growth/ Total No. Tested | |
| *4 oz./ 1 gallon defined as 8.93 g +/- 0.03 g test substance + 291.07 g +/- 0.03 g of 400 ppm AOAC Synthetic Hard Water, Spray, 3-minute contact time, 5% organic load present* | | | | |
| 51618813 | *Bordetella bronchiseptica* (ATCC 10580) | 5439EG2200 | 0/10 | 5.33 |
| | | 5439EG2400 | 0/10 | |
| 51618814 | *Bordetella pertussis* (ATCC 12743) | 5439EG2200 | 0/10 | 4.96 |
| | | 5439EG2400 | 0/10 | |

**Disinfection – Virucidal Efficacy:** Human Adenovirus Type 5 (ATCC VR-5)

| MRID | Organism | Description | Results | | | Dried Virus Control ($Log_{10}$ $TCID_{50}$/ carrier) |
|---|---|---|---|---|---|---|
| | | | Lot 5439EG2200 | Lot 5439EG2400 | Lot 5439EG2600 | |
| *4 oz./ 1 gallon defined as 2.97 g +/- 0.03 g test substance + 97.03 g +/- 0.03 g of 400 ppm AOAC Synthetic Hard Water, 30-second contact time, 5% fetal bovine serum present* | | | | | | |
| 51618818 | Human Adenovirus Type 5 (ATCC VR-5) | $10^{-1}$ to $10^{-5}$ dilution | Complete inactivation | Complete inactivation | Complete inactivation | 5.25 |
| | | $Log_{10}$ $TCID_{50}$/100 µl | ≤ 0.50 | ≤ 0.50 | ≤ 0.50 | |
| | | $Log_{10}$ $TCID_{50}$/carrier | ≤ 0.80 | ≤ 0.80 | ≤ 0.80 | |
| | | Log Reduction | ≥ 4.75 | ≥ 4.75 | ≥ 4.75 | |

**Soft Surface Disinfection – Bactericidal Efficacy**

| MRID | Organism | Fabric Type | Test Date | Results | | Population Control Average $Log_{10}$ CFU/ carrier |
|---|---|---|---|---|---|---|
| | | | | Lot. No. | No. Exhibiting Growth/ Total No. Tested | |
| *6 oz./ 1 gallon of 400 ppm AOAC Synthetic Hard Water, 10-minute contact time, 5% organic load present* | | | | | | |
| 51618819 | *Staphylococcus aureus* (ATCC 6538) | 100% Cotton | 5/24/2021 | 5439EG2200 | 0/60 | 6.17 |
| | | | | 5439EG2400 | 0/60 | |
| | | | | 5439EG2600 | 0/60 | |
| | | 100% Polyester | 5/26/2021 | 5439EG2200 | 0/60 | 6.36 |
| | | | | 5439EG2400 | 1/60 | |
| | | | | 5439EG2600 | 0/60 | |
| | *Pseudomonas aeruginosa* (ATCC 15442) | 100% Cotton | 6/7/2021 | 5439EG2200 | 0/60 | 5.06 |
| | | | | 5439EG2400 | 0/60 | |
| | | | | 5439EG2600 | 0/60 | |
| | | 100% Polyester | 6/4/2021 | 5439EG2200 | 0/60 | 5.78 |
| | | | | 5439EG2400 | 0/60 | |
| | | | | 5439EG2600 | 1/60 | |

**Soft Surface Disinfection – Virucidal Efficacy:** Feline calicivirus, Strain F-9 (ATCC CR-782

| MRID | Organism | Fabric Type | Description | Results | | | | Dried Virus Control ($Log_{10}$ $TCID_{50}$/ carrier) | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Lot 5439EG2200 | | Lot 5439EG2400 | | | |
| *6 oz./ 1 gallon of 400 ppm AOAC Synthetic Hard Water, 5-minute contact time, 5% organic load present* | | | | | | | | | |
| 51618820 | Feline calicivirus, Strain F-9 (ATCC CR-782) | 100% Cotton | Replicate | 1 | 2 | 1 | 2 | 1 | 2 |
| | | | $10^{-2}$ to $10^{-6}$ dilution | Complete inactivation | | Complete inactivation | | 5.05 | 4.80 |
| | | | $Log_{10}$ $TCID_{50}$/ 100 µl | ≤ 1.50 | | ≤ 1.50 | | | |
| | | | $Log_{10}$ $TCID_{50}$/ carrier | ≤ 1.80 | | ≤ 1.80 | | | |
| | | | Log Reduction | ≥ 3.13 | | ≥ 3.13 | | | |
| | | 100% Polyester | Replicate | 1 | 2 | 1 | 2 | 1 | 2 |
| | | | $10^{-1}$ to $10^{-5}$ dilution | Complete inactivation | | Complete inactivation | | 5.05 | 5.05 |
| | | | $Log_{10}$ $TCID_{50}$/ 100 µl | ≤ 1.50 | | ≤ 1.50 | | | |
| | | | $Log_{10}$ $TCID_{50}$/ carrier | ≤ 1.80 | | ≤ 1.80 | | | |
| | | | Log Reduction | ≥ 3.25 | | ≥ 3.25 | | | |

**Soft Surface Disinfection – Virucidal Efficacy:** Human Adenovirus Type 5 (ATCC VR-5)

| MRID | Organism | Fabric Type | Description | Results | | Dried Virus Control ($Log_{10}$ $TCID_{50}$/ carrier) |
|---|---|---|---|---|---|---|
| | | | | Lot 5439EG2200 | Lot 5439EG2400 | |
| *6 oz./ 1 gallon of 400 ppm AOAC Synthetic Hard Water, 10-minute contact time, 5% organic load present* | | | | | | |
| 51618821 | Human Adenovirus Type 5 (ATCC VR-5) | 100% Cotton | $10^{-2}$ to $10^{-6}$ dilution | Complete inactivation | Complete inactivation | 5.05 |
| | | | $Log_{10}$ $TCID_{50}$/ 100 µl | ≤ 1.50 | ≤ 1.50 | |
| | | | $Log_{10}$ $TCID_{50}$/ carrier | ≤ 1.80 | ≤ 1.80 | |

| MRID | Organism | Fabric Type | Description | Results | | Dried Virus Control ($Log_{10}$ $TCID_{50}$/ carrier) |
|---|---|---|---|---|---|---|
| | | | | Lot 5439EG2200 | Lot 5439EG2400 | |
| *6 oz./ 1 gallon of 400 ppm AOAC Synthetic Hard Water, 10-minute contact time, 5% organic load present* | | | | | | |
| | | | Log Reduction | ≥ 3.25 | ≥ 3.25 | |
| | | 100% Polyester | $10^{-1}$ to $10^{-5}$ dilution | Complete inactivation | Complete inactivation | 5.30 |
| | | | $Log_{10}$ $TCID_{50}$/ 100 µl | ≤ 1.50 | ≤ 1.50 | |
| | | | $Log_{10}$ $TCID_{50}$/ carrier | ≤ 1.80 | ≤ 1.80 | |
| | | | Log Reduction | ≥ 3.50 | ≥ 3.50 | |

## V. STUDY CONCLUSIONS

| MRID | Claim | Surface Type | Application Method(s) and Dilution | Contact Time | Soil load | Diluent | Organism(s) | Data support tested conditions? |
|---|---|---|---|---|---|---|---|---|
| 51618801, 51618802, 51618803, 51618804, 51618805, 51618806, 51618807, 51618808, 51618809, 51618810, 51618811, 51618815, 51618816, 51618817, 51618818 | Disinfectant, virucidal | Hard, non-porous surface | Liquid concentrate diluted to 4 oz./ 1 gallon; applied as trigger spray | 30 seconds | 5% | 400 ppm AOAC Synthetic Hard Water | • Bovine Viral Diarrhea Virus (BVDV) (ATCC VR-1422) as a surrogate for Human Hepatitis C Virus<br>• Respiratory Syncytial Virus (RSV), Strain Long (ATCC VR-26)<br>• Canine Distemper Virus, Strain Lederle (ATCC VR-128)<br>• Canine Parvovirus, Strain Cornell-780916-80 (ATCC VR-2017)<br>• Human Coronavirus, Strain 229E (ATCC VR-740)<br>• Feline Panleukopenia virus, Strain Philips-Roxane (ATCC VR-648)<br>• Poliovirus type 1, Strain Chat (ATCC VR-1562)<br>• Vaccinia virus, Strain WR (ATCC VR-119)<br>• Human Rotavirus, Strain WA (ATCC VR-2018)<br>• Duck Hepatitis B virus as a surrogate for Human Hepatitis B | **Yes** |

| MRID | Claim | Surface Type | Application Method(s) and Dilution | Contact Time | Soil load | Diluent | Organism(s) | Data support tested conditions? |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | virus, Source: Hepadnavirus Testing Inc., Palo Alto, CA<br>• Human Immunodeficiency Virus type 1, Strain HTLV-$III_B$ obtained from Advanced Biotechnologies, Inc. Columbia, MD<br>• SARS-Related Coronavirus 2, Strain Isolate USA-WA1/2020 (Source: BEI Resources NR-52281)<br>• Measles virus, strain Edmonston (ATCC VR-24)<br>• Human Herpes Simplex Virus Type 1, Strain F (ATCC VR-733)<br>• Herpes Simplex Virus type 2, Strain G (ATCC VR-734)<br>• Human Adenovirus Type 5 (ATCC VR-5) | |
| 51618812 | Disinfectant, virucidal | Hard, non-porous surface | Liquid concentrate diluted to 4 oz./ 1 gallon; applied as trigger spray | 10 seconds | 5% | 400 ppm AOAC Synthetic Hard Water | • SARS-Related Coronavirus 2, Strain Isolate USA-WA1/2020 (Source: BEI Resources NR-52281) | **Yes** |

| MRID | Claim | Surface Type | Application Method(s) and Dilution | Contact Time | Soil load | Diluent | Organism(s) | Data support tested conditions? |
|---|---|---|---|---|---|---|---|---|
| 51618813, 51618814 | Disinfectant, bactericidal | Hard, non-porous surface | Liquid concentrate diluted to 4 oz./ 1 gallon; applied as trigger spray | 3 minutes | 5% | 400 ppm AOAC Synthetic Hard Water | • *Bordetella bronchiseptica* (ATCC 10580)<br>• *Bordetella pertussis* (ATCC 12743) | **Yes** |
| 51618819 | Disinfectant, bactericidal – soft surface | Soft surface, porous fabric, 100% cotton and 100% polyester | Liquid concentrate diluted to 6 oz./ 1 gallon; applied as trigger spray | 10 minutes | 5% | 400 ppm AOAC Synthetic Hard Water | • *Staphylococcus aureus (ATCC 6538)*<br>• *Pseudomonas aeruginosa (ATCC 15442)* | ⸸**Yes** |
| 51618820 | Disinfectant, virucidal – soft surface | Soft surface, porous fabric, 100% cotton and 100% polyester | Liquid concentrate diluted to 6 oz./ 1 gallon; applied as trigger spray | 5 minutes | 5% | 400 ppm AOAC Synthetic Hard Water | • Feline calicivirus, Strain F-9 (ATCC CR-782) | ⸸**Yes** |
| 51618821 | Disinfectant, virucidal – soft surface | Soft surface, porous fabric, 100% cotton and 100% polyester | Liquid concentrate diluted to 6 oz./ 1 gallon; applied as trigger spray | 10 minutes | 5% | 400 ppm AOAC Synthetic Hard Water | • Human Adenovirus Type 5 (ATCC VR-5) | ⸸**Yes** |

⸸**These data to support soft surface disinfection claims were reviewed within the context of discussions between the Agency and Ecolab representatives. At the time of the submission and review of this action, the OECD method to evaluate disinfection on soft surfaces as well as relevant Agency guidance were still being developed and drafted. Per the meetings**

**held on May 28, 2020, October 8, 2020, and December 12, 2020, with the Agency and Ecolab regarding the soft surface disinfection claim, Ecolab agreed to perform additional testing in the future once the OECD method is finalized.**

## VI. LABEL COMMENTS

**Label Date/Identification Number:**

Multi Purpose Plus Disinfectant Cleaner (Primary – Liquid Dilutable), EPA Reg. No. 1677-272, dated 8/18/2021

Multi Purpose Plus Disinfectant Cleaner RTU (Secondary), EPA Reg. No. 1677-273, dated 7/16/2021

1. The proposed label claims that the product, Multi Purpose Plus Disinfectant Cleaner (Primary – Liquid Dilutable), EPA Reg. No. 1677-272, when diluted at 4 oz. per gallon of 400 ppm AOAC Synthetic Hard Water for spray application, and Multi Purpose Plus Disinfectant Cleaner RTU (Secondary), EPA Reg. No. 1677-273, when applied as a ready-to-use spray is an effective disinfectant with virucidal activity against the following on hard, non-porous surfaces in the presence of 5% organic soil for a 30-second contact time:

    - Bovine Viral Diarrhea Virus (BVDV) (ATCC VR-1422) as a surrogate for Human Hepatitis C Virus
    - Respiratory Syncytial Virus (RSV), Strain Long (ATCC VR-26)
    - Canine Distemper Virus, Strain Lederle (ATCC VR-128)
    - Canine Parvovirus, Strain Cornell-780916-80 (ATCC VR-2017)
    - Human Coronavirus, Strain 229E (ATCC VR-740)
    - Feline Panleukopenia virus, Strain Philips-Roxane (ATCC VR-648)
    - Poliovirus type 1, Strain Chat (ATCC VR-1562)
    - Vaccinia virus, Strain WR (ATCC VR-119)
    - Human Rotavirus, Strain WA (ATCC VR-2018)
    - Duck Hepatitis B virus as a surrogate for Human Hepatitis B virus, Source: Hepadnavirus Testing Inc., Palo Alto, CA
    - Human Immunodeficiency Virus type 1, Strain HTLV-$III_B$ obtained from Advanced Biotechnologies, Inc. Columbia, MD
    - Measles virus, strain Edmonston (ATCC VR-24)
    - Human Herpes Simplex Virus Type 1, Strain F (ATCC VR-733)
    - Herpes Simplex Virus type 2, Strain G (ATCC VR-734)
    - Human Adenovirus Type 5 (ATCC VR-5)

    These claims are **acceptable** as they are supported by the submitted data. Study reports conducted at Ecolab Schuman Campus did not include the relative humidity during testing. In future testing, this condition should be reported in testing.

2. The proposed label claims that the product, Multi Purpose Plus Disinfectant Cleaner (Primary – Liquid Dilutable), EPA Reg. No. 1677-272, when diluted at 4 oz. per gallon of 400 ppm AOAC Synthetic Hard Water for spray application, and Multi Purpose Plus Disinfectant Cleaner RTU (Secondary), EPA Reg. No. 1677-273, when applied as a ready-to-use spray is an effective disinfectant with virucidal activity against the following on hard, non-porous surfaces in the presence of 5% organic soil for a 10-second contact time:

- SARS-Related Coronavirus 2, Strain Isolate USA-WA1/2020 (Source: BEI Resources NR-52281)

These claims are **acceptable** as they are supported by the submitted data.

3. The proposed label claims that the product, Multi Purpose Plus Disinfectant Cleaner (Primary – Liquid Dilutable), EPA Reg. No. 1677-272, when diluted at 4 oz. per gallon of 400 ppm AOAC Synthetic Hard Water for spray application, and Multi Purpose Plus Disinfectant Cleaner RTU (Secondary), EPA Reg. No. 1677-273, when applied as a ready-to-use spray is an effective disinfectant with bactericidal activity against the following on hard, non-porous surfaces in the presence of 5% organic soil for a 3-minute contact time:

    - *Bordetella bronchiseptica* (ATCC 10580)
    - *Bordetella pertussis* (ATCC 12743)

    These claims are **acceptable** as they are supported by the submitted data.

4. The proposed label claims that the product, Multi Purpose Plus Disinfectant Cleaner (Primary – Liquid Dilutable), EPA Reg. No. 1677-272, when diluted at 6 oz. per gallon of 400 ppm AOAC Synthetic Hard Water for spray application, and Multi Purpose Plus Disinfectant Cleaner RTU (Secondary), EPA Reg. No. 1677-273, when applied as a ready-to-use spray is an effective disinfectant with bactericidal activity against the following on soft, porous surfaces in the presence of 5% organic soil for a 10-minute contact time:

    - *Staphylococcus aureus (ATCC 6538)*
    - *Pseudomonas aeruginosa (ATCC 15442)*

    These claims are **acceptable** as they are supported by the submitted data. **These data to support soft surface disinfection claims were reviewed within the context of discussions between the Agency and Ecolab representatives. At the time of the submission and review of this action, the OECD method to evaluate disinfection on soft surfaces as well as relevant Agency guidance were still being developed and drafted. Per the meetings held on May 28, 2020, October 8, 2020, and December 12, 2020 with the Agency and Ecolab regarding the soft surface disinfection claim, Ecolab agreed to perform additional testing in the future once the OECD method is finalized.**

5. The proposed label claims that the product, Multi Purpose Plus Disinfectant Cleaner (Primary – Liquid Dilutable), EPA Reg. No. 1677-272, when diluted at 6 oz. per gallon of 400 ppm AOAC Synthetic Hard Water for spray application, and Multi Purpose Plus Disinfectant Cleaner RTU (Secondary), EPA Reg. No. 1677-273, when applied as a ready-to-use spray is an effective disinfectant with virucidal activity against the following on hard, non-porous surfaces in the presence of 5% organic soil for a 5-minute contact time:

    - Feline calicivirus, Strain F-9 (ATCC CR-782)

These claims are **acceptable** as they are supported by the submitted data. **These data to support soft surface disinfection claims were reviewed within the context of discussions between the Agency and Ecolab representatives. At the time of the submission and review of this action, the OECD method to evaluate disinfection on soft surfaces as well as relevant Agency guidance were still being developed and drafted. Per the meetings held on May 28, 2020, October 8, 2020, and December 12, 2020, with the Agency and Ecolab regarding the soft surface disinfection claim, Ecolab agreed to perform additional testing in the future once the OECD method is finalized.**

6. The proposed label claims that the product, Multi Purpose Plus Disinfectant Cleaner (Primary – Liquid Dilutable), EPA Reg. No. 1677-272, when diluted at 6 oz. per gallon of 400 ppm AOAC Synthetic Hard Water for spray application, and Multi Purpose Plus Disinfectant Cleaner RTU (Secondary), EPA Reg. No. 1677-273, when applied as a ready-to-use spray is an effective disinfectant with virucidal activity against the following on soft, porous surfaces in the presence of 5% organic soil for a 10-minute contact time:

    - Human Adenovirus Type 5 (ATCC VR-5)

    These claims are **acceptable** as they are supported by the submitted data. **These data to support soft surface disinfection claims were reviewed within the context of discussions between the Agency and Ecolab representatives. At the time of the submission and review of this action, the OECD method to evaluate disinfection on soft surfaces as well as relevant Agency guidance were still being developed and drafted. Per the meetings held on May 28, 2020, October 8, 2020, and December 12, 2020 with the Agency and Ecolab regarding the soft surface disinfection claim, Ecolab agreed to perform additional testing in the future once the OECD method is finalized.**

7. Make the following changes to the proposed label. The following recommendations apply to Multi Purpose Plus Disinfectant Cleaner (Primary – Liquid Dilutable), EPA Reg. No. 1677-272, dated 8/18/2021, and Multi Purpose Plus Disinfectant Cleaner RTU (Secondary), EPA Reg. No. 1677-273, dated 7/16/2021, (page numbers may vary – the following page numbers are based on the label for EPA Reg. No. 1677-272):
    a. Throughout the label,
        i. Ensure that the brackets are removed from “hard, non-porous” surfaces.
        ii. Ensure claims for “sanitizer/disinfectant cleaner”, when referencing one-step, are qualified with “when the directions for use for sanitizer/disinfection are followed.”
        iii. Ensure that all claims for SARS-CoV-2 are specified with “on hard, non-porous surfaces” (specifically, the new SARS-CoV-2 claims). Also, remove references to USA-WA when referencing SARS-CoV-2 to be consistent with WHO recommendations that strain names should not include references to specific locations.
        iv. Remove all references to “2019 Novel Coronavirus” to align with WHO and CDC nomenclature.
        v. Revise “Allow surface to remain wet…” to read “Allow surfaces to remain **visibly** wet…”

vi. Especially on pages 9 and 15, specify that the exterior surfaces of appliances, refrigerators, refrigerator equipment, and similar surfaces be "allowed to come to room temperature before treatment".

b. On page 2, revise:

"For spray application, spray 6-8 inches from the surface. ~~[Rub [wet surface] with clean brush, sponge or cloth].~~ Allow surface to remain wet for 3 minutes. Allow to air dry or remove solution with a wipe, mop, cloth, sponge, squeegee, or vacuum pickup. [No [water] rinse required]. [A water rinse is not required]."

To read:

"For spray application, spray 6-8 inches from the surface. Allow surface to remain **visibly** wet for 3 minutes. Allow to air dry or remove solution with a wipe, mop, cloth, sponge, squeegee, or vacuum pickup. [No [water] rinse required]. [A water rinse is not required]."

Treated surfaces should not be disturbed during the full treatment exposure time.

c. On page 7, remove "and on porous surfaces" as data to substantiate "Human Rhinovirus 37, Strain 151-1, ATCC VR-1607" disinfection on porous surfaces were not submitted.

d. On page 10, remove "Bacteria-fighting" and "Virus-fighting" as "fighting" may imply heightened efficacy.

e. On page 11,
   i. Qualify the following one-step claims referring to "combining" cleaning/deodorizing/soil removal and sanitizer/disinfectant in one product with "when the directions for use for sanitizer/disinfection are followed"
      1. "This [cleaner] [detergent] [disinfectant] combines cleaning and [disinfecting] [in one product]"
      2. "This [cleaner] [detergent] [sanitizer] combines cleaning and [sanitizing] [in one product]"
      3. "This product is a [cleaner] [detergent] [disinfectant] which combines cleaning, [disinfecting] and [soil removal] [deodorizing] in one product"
      4. "This product is a [cleaner] [detergent] [sanitizer] which combines cleaning, sanitizing, and [soil removal] [deodorizing] in one product"
   ii. Revise "highly effective" to read "effective" as "highly" may imply heightened efficacy.
   iii. Qualify "Cleans and disinfects [soft surfaces] [fabrics] in one [easy] step" with "when the directions for use for disinfection are followed".
   iv. Remove "or less" from claims referencing SARS-CoV-2 at 30 seconds.

f. On pages 11 and 12, remove "commonly touched" or specify "commonly touched hard, non-porous surfaces".

g. On page 11,

i. Revise “Virucidal* in 30 seconds [or less] on hard, non-porous surfaces” to read “Virucidal* in 30 seconds [or less **for SARS-CoV-2**] on hard, non-porous surfaces”.
ii. Revise “Kills [99.9% of] viruses* in 30 seconds [or less]” to read “Kills [99.9% of] viruses* in 30 seconds [or less **for SARS-CoV-2**]”.

h. On page 12,
   i. Remove “revolutionary” and “revolutionizing” as these terms may imply heightened efficacy.
   ii. To align claims with current WHO and CDC nomenclature, revise “Effective against] [Kills] ~~[pandemic]~~ *SARS-CoV-2 [the virus that causes COVID-19] in 10 seconds [on]~~[~~Hard, Non-Porous~~]~~ [Non-Food Contact] [Surfaces]” to read “Effective against] [Kills] *SARS-CoV-2 [the virus that causes COVID-19] in 10 seconds [on] **Hard, Non-Porous** [Non-Food Contact] [Surfaces]”.
   iii. Remove “2019 Novel Coronavirus” to align claims with current WHO and CDC nomenclature.
   iv. Specify each instance of SARS-CoV-2 with “on hard, non-porous surfaces”.
   v. Remove “[Tested] [and] [proven effective] to help reduce the spread of [the] [SARS-CoV-2] [2019 Novel Coronavirus] [COVID-19 virus1] [in 10 seconds]”. This claim is too broad and implies that the product alone can help reduce the spread of SARS-CoV-2, which is misleading.
   Remove “Great for spot disinfection on [soft surfaces][fabrics]” and “Great for use as a [soft surface][fabric] disinfectant.”

i. On page 13, revise “… [which could harbor ~~hazardous~~ microorganisms] minimizes ~~the potential for~~ [cross-contamination on treated surfaces] ~~[outbreaks]~~”

   To read:

   “… [which could harbor **pathogenic** microorganisms] minimizes [cross-contamination on treated surfaces]”.

j. On page 16, remove surface materials that may be hard, porous surfaces, such as “ceramic”, “porcelain”, “quartz”, and “quarry tile”, or qualify these surfaces with “sealed”. The submitted data supports porous surfaces that closely resemble those tested – fabric materials.